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NEWS IN BRIEF

Pascal package
for Apple II

A PASCAL compiler has been announced for the Apple II as part of a complete package called "The Language System". Priced in the US at \$495, the package includes a 16K plug-in memory card, a 2K "Auto-start" ROM, and five diskettes containing Integer and Applesoft extended Basic in addition to Pascal.

Based on the UCSD language version, the compiler includes extensions tailored to the Apple's graphic and sound generation capabilities and requires a minimum 48K disc-based Apple II.

Dutch favour
UK micro way

THERE are lessons to be learned from the Dutch Government in the approach to expanding the use and application of microelectronics taken by the UK Government. A Dutch study group, set up to look into the potential social impact in Holland, has been impressed with efforts made so far, though it also points to the lack of attention given in the UK to potentially negative social consequences.

APL utilities

THE latest APL products from Cocking and Drury include a PERT package that runs on a 64K IBM 5110 and a set of workspace documentation utilities. The utilities, priced at £500, provide a means of tracing the structure of functions in a workspace and are available for VS/APL, APL/SV and Xerox APL.

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Royal date
for Cray
forecaster

THE distinctive shape of the Cray 1 supercomputer will be subject to Royal gaze tomorrow, Friday, when the European Centre for Medium Range Weather Forecasts at Shinfield Park near Reading is formally opened by Prince Charles.

The Cray 1 will analyse meteorological observations that have been decoded and stored by a Cyber 175 which front ends the machine. The Cray 1 will provide forecasts covering periods up to 10 days ahead for the 17 European countries participating in the ECMWF project.

Cray Research is now bidding against Burroughs, CDC and ICL for a contract from the Meteorological Office at Bracknell for a supercomputer to handle long range weather forecasts, part of the Met Office's contribution to the world climate programme of the World Meteorological Organisation (CW, February 8).

Cray Research UK has just appointed a new managing director, David O'Brien, who was formerly public sector business manager with IBM Europe. He succeeds Peter Appleton Jones, who has been elected vice president, marketing at Cray Research in Minneapolis.

Double density

IBM users are now offered a dual spindle disc drive by Memorex, the 3650, with a recording density of 635 Megabytes per spindle — twice the density on the IBM 3350 or the existing Memorex 3650. The 3652 can be mixed on the same system with the 3650 and Memorex sees the 3652 being used to hold less frequently accessed files.

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FERRANTI

Insac's
viewdata
partner
in US

INSAC's long-awaited partner for viewdata in the US has been confirmed as GTE, the country's second largest telephone company (CW, January 11), and a limited service is to be offered to business users this summer, to test the market.

GTE is expected to provide viewdata services to the business and domestic markets, while Insac Viewdata offers products to closed user groups and corporate users for in-house systems.

Prices were not disclosed for the agreements, which cover a sub-licence for the Post Office Prestel system, to which Insac has exclusive US marketing rights, and an exclusive licence in the US and Canada for Insac enhancements.

Insac is expected to continue to produce enhancements for viewdata, such as the add-on software sold to Germany last month (CW, May 3). It also believes that the relationship with GTE creates a channel for the distribution of other UK software products.

Meanwhile, work continues on rival systems, and United Press International has demonstrated its NewsShare service to 13,000 delegates at a six-day conference run by the American Newspaper Publishers' Association Research Institute.

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Briefing
Takeover talks
at Microdata

MICRODATA, US owner of CMC UK, is involved in takeover talks in the US with an unnamed "Fortune 500" company. Late last year Microdata was the subject of an unsuccessful takeover bid by the office equipment firm, AM International, formerly Autograph-Multigraph, but AM is not Microdata's current rival.

Microdata developed the baby system sold by CMC UK under licence in France by Interchange (CW, March 15). Microdata also supplies Outil with the Express processor used in its new 1800 system (CW, May 3).

A profits fall

IN the wake of the palace revolution at General Antonic, in which the GA chairman, Larry Goshorn, was replaced (CW, May 31), the company has published financial results for the third quarter, ended April 28, of its current financial year which show a dramatic fall in net profits — from \$1,387,000 last year to \$206,000. GA's \$12K bit chip. See page 3.

AI Office order

FERRANTI has won a £150,000 order from the Meteorological Office for a dual Argus 7000 system to connect Met Office stations throughout the UK to the European Centre for Medium Range Weather Forecasting at Shinfield Park, near Reading (CW, June 14). The Argus system, located at the Office HQ at Bracknell, will use the X20 packet switched protocol.

Share in CII-HB

FRENCH industrial conglomerate Bouygues Pont A Mousson is moving ahead with its plans to take a stake in Franco-American computer giant CII-Honeywell Bull (CW, June 14), and negotiations are believed to be under way with the French government and CGE, which are the two major shareholders in Compagnie des Machines Bull.

Modcomp for Toplo

MODCOMP has won the contract for the computers to power the Stock Exchange's market information service, Topic. Output of Price Information by Computer (CW, March 15). The dual Modcomp 7670 system on order is worth \$580,000 and will respond to 1,000 interrogations every five seconds.

Data encoding

VIA International, the world-wide credit card organisation, has now formally approved specifications for the standard magnetic stripe encoding of all credit cards (CW, February 15). The organisation has been made necessary by the increasing use of credit cards in the retail sector, and the need for a standardised format for the magnetic stripe.

UMIST professor to lecture in China

URGENTNESS by the Chinese to import Western computer technology on a large scale has led to an invitation to a leading UK academic for a month-long tour of China, to give lectures and hold discussions.

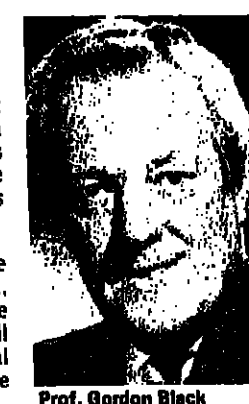
Professor Gordon Black of University of Manchester Institute of Science and Technology was invited following a visit to the UK last October of a delegation from the Chinese Academy of Sciences. He flew to China on July 15.

According to Professor Black, the Chinese have a wide ranging interest in the use of computers in universities, including large vector machines and communications; in applications such as meteorology and oil prospecting; and in government administration, particularly health services. They are turning to Britain for this know-how.

"They are anxious to get machines installed," Professor Black told Computer Weekly,

emphasising that there will be great opportunities for export to China for the UK computer industry. This follows a recent change in attitude in China towards scientific links with the West.

Black will give lectures at the universities of Peking, Tientsin, Hanchow, and Canton; but the most important part of the trip will be the discussions with technical and administrative men in science and industry.



Prof. Gordon Black

MIXED VIEWS ON EEC PLAN

'Grandiose' law
project panned

PLANS for the development of a completely new and highly sophisticated system for retrieving legal information throughout the Common Market have been applauded by some lawyers and described as "grandiose" by others. The proposals, developed by Selcon and presented at a symposium in Strasbourg last week, are now being considered by EEC officials in Brussels.

The meeting was called to discuss the results of the study into legal information retrieval commissioned by the EEC in June 1977 (CW, February 23, 1978, and July 21, 1977). The firms, which did the work, Selcon, SFS in Germany, and SEMA and Ingenieria Informatica in France, presented the findings of a user survey as well as the proposed system design to fill the needs turned up by the survey.

The view of the study group which did the work, was that after examining the 30 legal retrieval systems currently

running in Europe it seemed there was no single one that could provide an acceptable service on a European scale; some 10,000,000 legal documents are produced every year in the Common Market. Therefore the study group proposed starting again completely from scratch with a fresh design.

The weaknesses of existing systems were felt to include the inability to handle such vast databases; limitations on searching techniques that can be used; restrictions to either

ICL gets into oil
business with BNOC

AS a result of pulling off a major coup with the Abu Dhabi National Oil Co, which ordered an ICL 2972 last year (CW, September 7, 1978), ICL has signed a co-operative agreement with the British National Oil Corp under which ICL and BNOC will jointly develop a range of systems to run on the larger 2800 series computers.

BNOC sees its part in the deal essentially as helping the UK computer manufacturer to become a force in the world oil business. A BNOC spokesman said, "After all, ICL is British."

To get the ball rolling in a big way BNOC has ordered an ICL 2976, estimated to be worth about £2.6 million. The machine will be installed at BNOC's headquarters in Glasgow. ICL says that the oil systems for the 2800 will be developed by

Viking ship
capsizes

THE blue-and-white Unicef shield was just one of several valuable items lost when the Viking longship, Odin's Raven, was hit by a freak wave and capsized off Tobermory Harbour, Skye, last week. The ship was filming for the BBC at the time with six of the 16-man crew aboard. The boat was recovered with all essential items, and the crew, none the worse for their ducking, are still on schedule to arrive at Peel in time for the Isle of Man Parliament's Millennium celebrations.

The ship is a replica of the one which sailed from Norway to the Isle of Man 1,000 years ago.

US battle
for Peking
mainframe
contract

SELECTION of the mainframe computer for China's ambitious United Nations-funded national computer centre (CW, June 14) was completed last week, and negotiations with the successful contender are under way. The winner should be announced by the end of the month, and it will be a US manufacturer.

To be the core of the Information Processing and Training Centre for International Cooperation in Peking, the mainframe contract, which includes one large minicomputer and two or three smaller ones, is worth between \$3 and \$4 million of the \$12 million that the United Nations Development Programme, UNDP, is putting up for the project.

A team of four Chinese who have been appointed to the centre have been visiting the US this month. They attended the NCC in New York, and visited IBM, Control Data, Burroughs and Univac. Honeywell may also have bid.

The tender is likely to have been a straight fight between IBM and CDC. The Control Data Cyber 170 line is probably the most appropriate for the application, and that company is usually willing to offer attractive fringe benefits in the form of support and training to win such a contract, but the Chinese favour IBM. Originally they were only prepared to consider an IBM machine, but having said it had to be an American machine, were persuaded to look at what other US companies had to offer.

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GILB'S MYTHODOLOGY

How to specify maintainability goals for soft system components

MOST experienced computer professionals are now well aware that maintenance of programs and databases is a very important problem.

The simplest measure of this is the current payroll cost of such maintenance, which is frequently 40% to 100% of the programmer workforce.

The degree of maintenance ease for programs and files is, as in the case of machines, not a natural constant which we must tolerate. It is a result of the system design, or perhaps the lack of conscious design effort to make the system easily maintainable.

For this reason, many of us have decided that something must be done to improve the situation. The word has gone out: More maintainable programs! Other soft parts of the system, such as the files, are somehow often forgotten.

Someone shouts, "Structured". Someone else shouts, "Centralise the files: let us go database". Techniques of unknown value are thrown, at great expense, in the direction of ill-defined problems. The result is, of course, unpredictable, except that it is bound to be disappointing.

It is a generally accepted principle of business management and of systems engineering, that we must start off with a clearly defined set of objectives. I believe that this applies to the design engineering of programs and files. We must state the levels and the types of maintainability which we propose to build into our soft system components.

I know, from personal investigation, that to specify a

maintenance goal at all is extremely rare in today's international programming environment. At best the need for improvement is understood by all concerned. The programmers and designers are brainwashed to think in terms of techniques for reaching those vague goals (like structured programming). But they never try to quantify the goal level in advance, or to measure achievement of it afterwards.

What I am going to show in this, and some succeeding columns, will therefore come as a culture shock to most readers. I will not only show that the goal of soft system maintainability can be stated in quantitative terms, but I will also show that the simple concept of maintainability deserves to be "exploded" into about 10 "sub-goals", so that we can get more

realistic control over the design of maintainability.

In subsequent columns, I shall follow up by showing how to specify, and check for adequacy, a design to meet the maintainability levels we have specified. Table 1 shows a second level detailing of maintainability goals.

At the highest level of system goal specification, maintainability is specified on a level with other important system goals such as performance, delivery date, development cost, operational cost, portability, security and reliability, for example.

Many of these goals require a detailed breakdown if we want to ensure that the system designers understand them fully and provide for them in the design specifications. Security is one such goal.

	Worst case	Best case	Planned level
Problem recognition time	2.4 hours	1 min	60 mins
Administrative delay time	1 week	5 mins	60 mins
Tool and document collection time	1 hour	2 mins	10 mins
Problem analysis time	50 mins	30 secs	5 to 10 mins
Change specification time	1 hour ?	30 secs	5 mins ?
Active correction time	3 x problem analysis time	30 secs ?	3 x problem analysis time
Local correctness test time	1 hour	5 mins	5 mins
Global correctness test time	1 day	?	100 x active correct
Independent change audit time	2 weeks (wait for)	Same hour	Same day, before use
Recovery from original problem time	Same day		2 hours

TABLE 1: A second level detailing of maintainability goals.

"How can I structure the program so that it will be easy for other programmers to read and understand?" But, as we can see from the list of maintainability goal areas, this is only a small part of the overall problem. In terms of time, it is not even significant to try to optimise this.

In some cases, such as an unexpected minor error, it may not even be desirable to carry out such an analysis at all. It may be more interesting to have "spare part" software available for immediate use, which does not contain exactly that minor fault. System programmers use this method every day at your site. The breakdown which I have illustrated here is a close parallel to the breakdown of

maintainability goals which will be found in conventional systems engineering textbooks.

The practically oriented reader will notice that this specification intentionally does not give any answers in terms of how to achieve these goals. Indeed, the technical design process may well reveal that some goals are unrealistic, and must be changed to more practical goals. We consciously limit ourselves to asking the right set of questions (or at least a better set than we are currently asking).

This is a language for system architects and system engineers. If you aren't prepared to speak it, then sooner or later your management must find someone who will.

Alarm over implications of errors

IT is disturbingly easy to forget — when working on software at a low level — that one's system will ultimately take its place in a dangerous and demanding real world.

This blinkered view, which sees a programming error as an inconvenience rather than a potential cause of disaster, almost certainly stems from the historical predominance of batch processing applications.

While it may be expensive in stationery, a mistake on the in-house payroll is hardly likely to lead to sleepless nights — except perhaps for the analyst and programmer responsible.

Yet with the steady increase in real time and control applications, the potential final implications of programming errors are beginning to assume alarming proportions.

PROGRAMMER NOTES

Take, for example, the case of onboard flight control and avionics systems. At the time of writing, divers are still investigating the submerged remains of a prototype Tornado fighter which crashed in the Irish Sea off Blackpool on budget day.

There has not yet been — and there may never be — any suggestion that the accident was a result of software error.

However, with the very major role now played by digital systems in military aircraft, it might be seen as only a question of time before a catastrophic

malfunction is traced to a program error.

And errors in computer-aided design programs have already been blamed for costly and potentially disastrous engineering mistakes.

There was, for example, a case three months ago when five nuclear power stations were shut down in the US because stresses in the cooling system had been subtracted rather than added by the design program (CW, March 29).

All this brings home to one with some force that software quality and reliability assurance are far from being irrelevant and "academic" concerns.

It seems rather that techniques in these fields will assume an even greater significance and will shortly become a vital component of professional software activity.

SOFTWARE FILE

SDL moves to integrate Coral 66 with Mascot

SEVERAL further steps towards the integration of Coral 66 with Mascot have been taken by SDL with the release of its microprocessor development system Context (CW, June 7).

Context conforms to the now familiar pattern of hosted microprocessor development systems, using the superior power and facilities of a microcomputer to support the development of microprocessor software.

The host in this case is a Digital Equipment PDP-11, running under RSX-11M, and it is connected to the target microprocessor via a simple teletype link.

SDL sees most users completing initial testing on the PDP-11, where necessary simulating real time devices specific to the micro. Cross-assembled programs can subsequently be loaded down line to the target for final integration and testing.

A significant feature of this scheme is that even when running on the target, programs can continue to access the test files and simulators previously set up on the host. An evolutionary approach can thus be adopted to development, with live peripherals being taken on and checked out one by one.

Further, the programmer continues to enjoy the benefit of

full symbolic debugging, interacting with the micro-resident program via a terminal attached to the host.

Both these facilities, generally referred to by SDL as up line monitoring, are supported by the addition of a small communications module to the Mascot executive on the target.

On the host, the raw data returned by the target's communications module is translated back to the symbolic level via a program load map in conjunction with a stored representation of the Mascot ACP (Activity, Channel, Pool) diagram.

Thus even at the embedded testing stage, the detailed operation of the software can be directly compared with the Mascot application design, as specified in the ACP file.

A further significant Mascot-oriented innovation in Context

is the introduction of compile-time checks on module interaction.

Because Mascot application modules ("activities") can communicate with each other only through "channels" and "pools", the ACP diagram for a process represents all valid interactions between software components.

By checking, then, against the ACP file, Context can detect violations of the application design. These are reported by the Mascot-extended compiler as compile-time errors.

SDL sees such facilities as these as one line of attack on the critical question of software quality control and assurance. The majority of errors, it argues, arise at the system level and can be largely eliminated by a Mascot bridge between system design and implementation.

NCC releases Univac 90 version of Filetab

EMPHASISING its continuing commitment to the Filetab file maintenance and report generation package, the National Computing Centre has released a version for the Univac 90 series.

The new version complements an existing version for the I100 series and runs under the OS/3 operating system. It is priced at between £4,500 and £5,000.

There are believed to be around 2,500 users of 90 series machines worldwide and about 100 in the UK. In common with the other Filetab versions, the software will be sold by the NCC in the UK and by agents overseas.

In contrast to its IBM-oriented competitors, such as Mark IV and Easytrieve, Filetab is available on a number of major mainframes, including ICL, Honeywell and Siemens in addition to IBM and Univac. Applications written in it are therefore, for the most part, fully portable.

Minor modifications are however made between implementations to take advantage of specific operating system features. In the case of the Series 90 implementation, for example, the indexed sequential access method in OS/3 permits one to create an IS file directly from Filetab — a feature unique to this implementation.

Usage of Filetab has been growing rapidly in the last few years, the number of installations having now reached about 900. A good percentage of this base is outside the UK, overseas

sales accounting for almost £1 million of total NCC earnings from the package of £3.5 million.

Prompted no doubt by this achievement, the NCC is understood to be in the later stages of a major review focused on the future development of the product.

However the most obvious line of development — in the form of implementations on small business systems — has already been to some extent pre-empted by the original author of the package, Tom Barnard, whose closely related system RPI is being sold by Filetab Support Services.

NCC experts however see potential development avenues as far from closed and expect to announce significant new products before the end of the year.

Puzzler

GIVEN a rectangular box having internal dimensions of 22 x 19 x 17cm, what packing strategy must be adopted in order to get 295 bricks, each measuring 4 x 3 x 2cm, inside it?

The container has an internal capacity of 7,106 cubic centimetres, so theoretically there is room for 298 bricks with 2 cubic centimetres over. But practical problems restrict the maximum to one less than this. See page 61 for solution.

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Fast coding is aim of SpeedCobol man

AFTER many years of almost total neglect, serious efforts are now being made by a number of companies to introduce products which really improve the productivity of Cobol programmers, and make the language less laborious to program in, writes Tim Palmer in New York.

Latest contender on the US market is SpeedCobol, from an organisation which calls itself the Foundation for Software Engineering. The Foundation, based in Glendale, New York, is the name under which Dwight Minkler, who developed SpeedCobol, trades.

"I have been developing it for my own use over six years, and rewritten it five times," he told Computer Weekly.

"As it is written in Cobol, it will run on any machine which has Cobol on it. It is currently running on an IBM 370 under DOS, and on four different Honeywell machines: a G115, 2000 and two Level 64 machines, one under G115 emulation and

the other in native Gcos-64 mode." If all the claims made for SpeedCobol stand up, one of the key attractions is the price: a \$5,000 one-time licence per site with one year warranty, plus an optional \$500 annual maintenance.

Minkler describes SpeedCobol as a Cobol pre-compiler which can be used effectively within one hour of introduction, is self-documenting, and self-referencing, producing its own abbreviation-translation directories, and completely table-driven.

It is designed to cut coding time in half, at the same time improving program quality through the use of more descriptive names.

It takes up about 30K bytes on the 370, and a good table occupies typically another 20 to 25K bytes.

It will be included in the next issue of the Honeywell software directory.

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You know how the map of a disc can show a gradual deterioration of the layout. You may have noticed the machine slowing down in an attempt to access files. You know how long it takes to dump a security copy of disc (mainly because the whole file is dumped, not just the data). There is now a program which gives comprehensive disc management: ZAPP. You can evaluate ZAPP on free approval.

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OP SPOT

The one who made it into management

SITES looking to recruit operations staff could do worse than employ contractors with a view to offering permanent positions to those found to be suitable.

But such installations must be prepared to make it worthwhile for the contractor to take up permanent work, as instanced by the case of New Zealander Alan Morley.

The assistant operations manager of Honeywell's Bracknell, Berks site (stressing the fact that he was speaking as a private individual and not representing Honeywell) gave an account of how contract work led to his current position.

OP SPOT'S Bernard Allen would like to hear your opinions and ideas on all matters relating to computer operations.

Your letters should be sent to Op Spot, Computer Weekly, Dorset House, Stamford Street, London SE1 9LU. Telephone calls are equally welcome and Bernard can be contacted directly on 01-261 8035.

"My wife and I came over here on a working holiday in 1976, and so I wanted to find some short-term work which was also quite highly paid.

"The idea of contract operating was completely new to me because there was no such thing as a contract market in New Zealand at that time."

He went on a contract at Honeywell in Bracknell during 1979 — "a short-term contract which got longer and longer" — and was eventually offered the position of operations supervisor. "I turned it down because it would have meant a big drop in take-home pay," he said.

After a while, the company revamped the position, changed the job title and offered it to him again.

"It was a big decision because we had planned to return to New Zealand and accepting would mean a change in lifestyle. But the company offered me a really good package deal, so I took it."

"CONTRACT staff can work for the same agency and not meet, so functions like this are very useful," said Alan Morley, assistant operations manager at Honeywell, Bracknell.

He was one of three speakers who addressed a meeting on the subject of contract operating, held at the Piccadilly Hotel in London by operations staff agency Co Operators, a member of the VLI Group.

The meeting, which provided some interesting and lively debate, was chaired by former Computer Weekly editor Malcolm Peltu.

'We're treated as button-pushers'

CONTRACT work provides an outlet for operators who are unable to further their careers despite having considerable skills and experience.

It enables them to earn more and, by moving between sites, they gain a much wider experience of operations than would otherwise be possible.

But in the main, the skills of contractors are wasted because sites employ them as "button-pushers", and shift leaders, in particular, are reluctant to consult them and listen to their views.

These points were raised during an informal question and answer session, when contractors had their say about contract work. Shift leaders came in for a great deal of criticism for failing to make fuller use of the expertise of contract staff.

Several contractors said that

shift leaders resent the presence of contract staff at their installation, and regard it as a threat to their position.

Contractor Nick Berkley commented, "If you suggest an alternative solution to a particular problem, the shift leader often seems to resent it, and so it's best to keep quiet."

"I'm not at all impressed by shift leaders," added another. He later told me that on one contract the shift leader would sleep for the entire night shift, leaving him to get on with the work.

And Martin Leach, an operator with experience on Honeywell OS 2000 and Levels 64 and 88, said, "It's best just to fit in with what they want. If they ask for advice, give it, but otherwise keep quiet."

The fact that applications are run differently from site to site broadens the experience of contract staff, but has the disadvantage of sometimes making their task rather difficult.

In this context Nick Berkley said, "Although you might have experience on the machine and operating system used at the site, you sometimes have diffi-

culty because of the way they run their applications."

Similarly, Martin Leach commented, "This applies not only to operating but JCL writing also. It differs from one site to the next."

Operations documentation would help, but the matter is accorded scant attention at many installations. As one person at the meeting put it: "Documentation? There is no operations documentation."

On the question of why operators turn to contract work, a number expressed dissatisfaction in relation to career progression, including Martin Leach, who said:

"I was a shift leader at 20, but was unable to progress further because of my age. I realised this and turned to contract work."

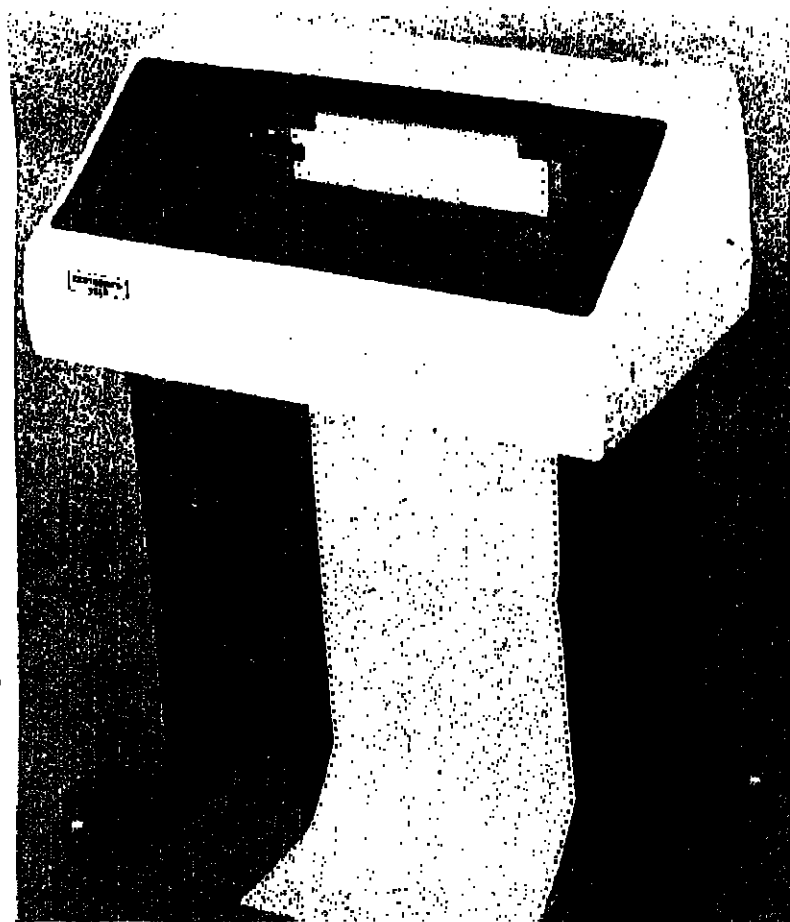
Asked why he has remained in contracting, he replied, "I'm in it for the money — that's the only reason."

Another contractor disagreed with Leach at that point, and said that he would accept the slightly lower-paid contract provided that it were interesting.

By Bernard Allen

UKS has Centronics 6000 Series Line Printers EX-STOCK

Available immediately from Cable & Wireless UK Services Ltd.



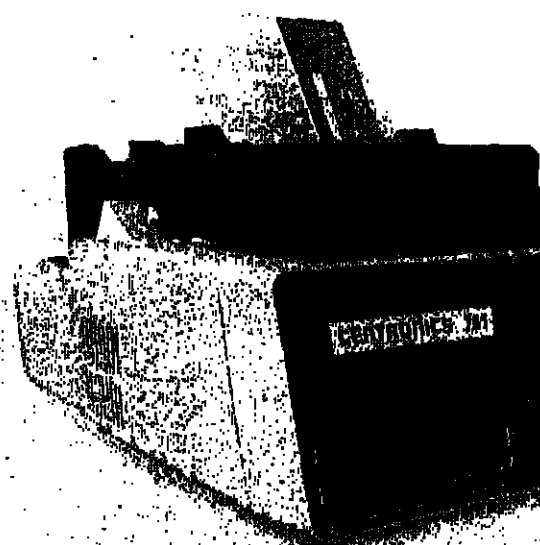
Models 6150, 6300 + 6600, configured to the standard Centronics parallel input specification, with the following options:—

- ☐ Front bottom form feed.
- ☐ UK64 ASCII print band.
- ☐ 2 channel direct access VFU.
- ☐ 132 Column printing.
- ☐ Paper jam sensor.
- ☐ Audio alarm.
- ☐ Casters.

Complete Unit Prices

- Model 6150* £3425
- Model 6300 £4177
- Model 6600 £5579

(*No audio alarm or paper jam sensor and is rear fed)



Also available. The following 700 Series Matrix Printers:

- | | Basic Price |
|----------------|-------------|
| ■ Model 700 | £1022 |
| ■ Model 701 | £1241 |
| ■ Model 702 | £1494 |
| ■ Model 703 | £1916 |
| ■ Model 761 RO | £1371 |

For further information contact Mr Len Watts at the address below:

Fewer jobs in future, contract staff warned

THE trend towards distributed processing and the "economics of scale" made when larger systems are introduced means that there will be "some recession in the market" for contract staff in this country.

So, as a result of the increased competition which will follow, contract staff must adopt a more "professional" approach if they are to get work.

This warning was given to contract operators at the meeting by Dave Lees, operations manager at Honeywell, Bracknell.

Lees also predicted that non-contract work would become available in Europe and that contractors would always be needed for short-term assignments.

On the question of why site employ contractors, he referred to the conversion process and the need to cover permanent staff who are on holiday or sick leave.

Lees stressed that he was at the meeting as a private individual and not as a representative of his employer, Honeywell.



Lees



Haylock

Where ops' view counts

SEVERAL Australian contractors were at the meeting, including Mike Ryan who is currently working at Honeywell in Bracknell.

He made some interesting points, comparing the role of operations staff in Australia with the part they play in this country.

Said Ryan, "In this country, sites are often content to call in the programmer, rather than allow the operators to look into

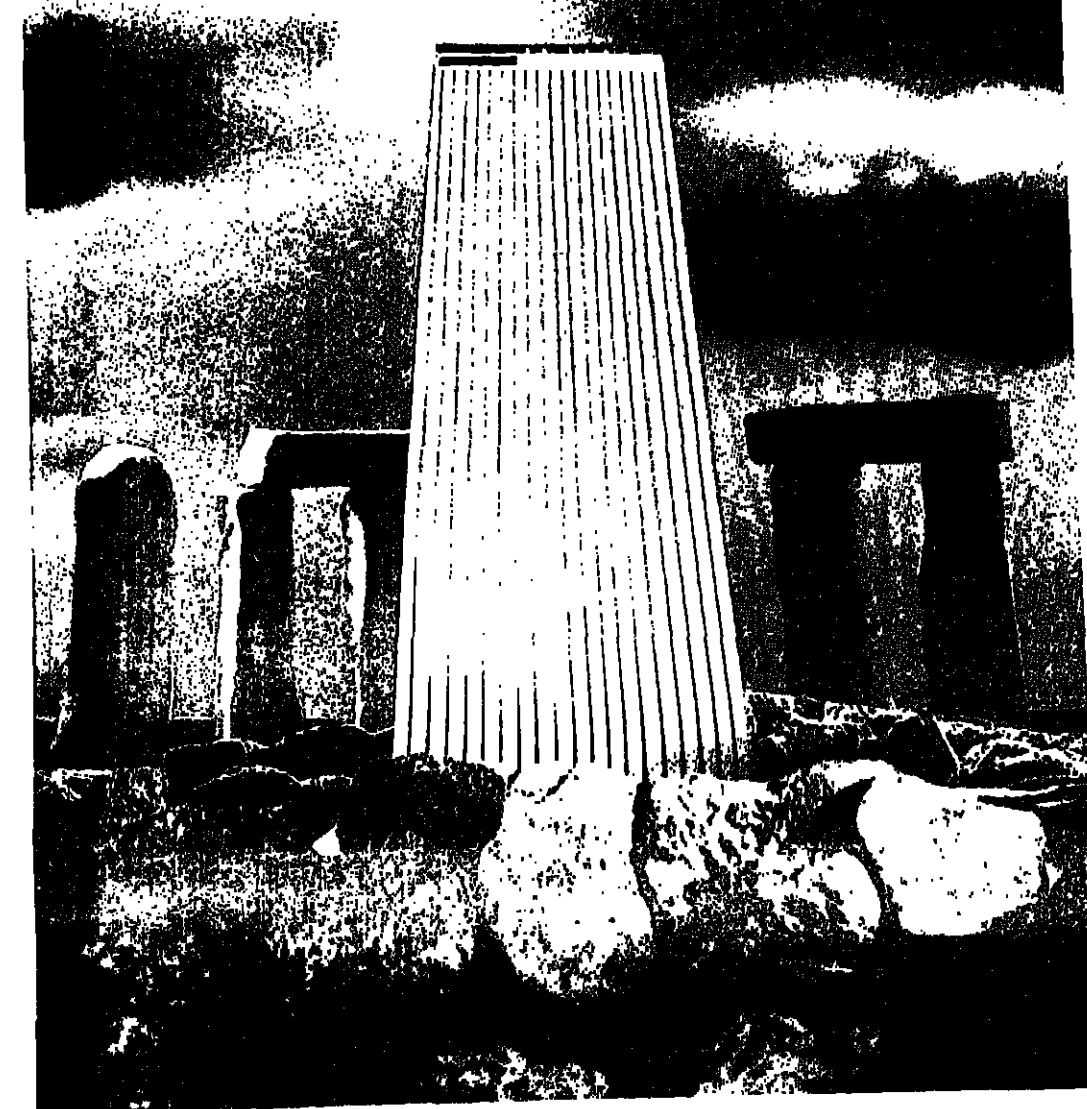
and solve problems. "Back home, system programmers and the like listen to the operators and act upon what they say. Over here, they realise that the operators know what they are talking about."

Ryan later told me that he knows several Australians who have held permanent positions both in this country and their homeland, and that their experiences have been similar.

Type of work will change

"It was a completely new ven-

THE 3200 TEAM IS ARRIVED



Perkin-Elmer opens the next chapter in computing history. With the introduction of the Model 3220 — first processor in the new Series 3200 — the second generation of SUPERMINIS makes its historic UK debut.

Highest Performance

Perkin-Elmer introduced the world's first 32-bit SUPERMINI in 1973. Now, with a background of over six years practical experience from more than 2000

installed systems worldwide, the second generation Series 3200 arrives as other manufacturers are just launching their first.

The Model 3220 has full 32-bit architecture, a data transfer rate of 8Mb/sec, MOS memory in 256Kb modules up to an ultimate 4Mb, memory error logging down to chip level, cache memory and 128 32-bit registers.

Lowest Cost

With all these features and many more, the Model 3220 costs less than many currently available 16-bit systems, a major cost breakthrough. For the first time, this brings within economic reach of a wide range of users the speed, accuracy, power and I/O handling capacity normally associated with 'mainframe' computers.

Mature Software

To match the most advanced hardware, Perkin-Elmer 32-bit software has been refined and proven where it counts — in the field. This powerful software includes OS/32, a real-time, multi-tasking operating system, together with a host of language processors and utilities, including COBOL, globally optimising FORTRAN

VII, BASIC, CORAL66, ITC transaction monitor and OS/MTM for multi-terminal program development facilities.

The 3200 Team

Perkin-Elmer, a Fortune 500 company, is world-renowned as a major manufacturer of high-technology optical, instrumentation and data processing products. The Model 3220 SUPERMINI is the latest evolution in the company's commitment to industry leadership and innovation. It is backed by years of field experience, fully-proven software and a team of dedicated professionals committed to making your installation a success.

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PERKIN-ELMER
Computer Systems Division

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Company _____ Telephone No. _____

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PEOPLE AND EVENTS



Young Engineer for Britain 1979 contest

MORE than 300 young inventors are competing in Young Engineer for Britain 1979, a competition organised by the Department of Industry as part of its strategy to encourage young people to consider a career in industry.

Projects are classed as either mechanical, electronic or chemical and should have commercial potential, benefit industrial production, cut waste, make better use of energy resources or improve an existing process. Last year's winners in-

cluded a microprocessor system, an invalid car and a vertical axis windmill.

Many awards have been offered by industry to national and regional winners, including scholarships, overseas and industrial visits and cash prizes. STC will present £500 to the best girl in each class.

The final will take place at the Wembley Conference Centre on October 24-25, and Prince Charles has been invited to present the title award.

Directors for Racal, Plessey and MDS

THE position of commercial director has been created at Racal Automation and is filled by Derek Henderson. He will be responsible for marketing, sales and service, and will be based at Ruislip. His previous position was area general manager for Racal Tacticon in Saudi Arabia. He had formerly worked for Racal as chief engineer in charge of receiving systems with Racal Communications, and this was followed by a five-year spell at Marconi Space and Defence Systems.

Another newly-created position, that of director of technology and strategic planning (components) with Plessey, will be taken by Dr Roger Gasgoyne, formerly systems manager of Commercial Union Assurance Company, has now been appointed management services manager of Merchant Investors Assurance. He will be responsible for all data processing and O&M activities within Merchant Investors.

John Eladen has become the youngest ever member of the board of Allied Business Systems, at the age of 27. He joined ABS seven years ago and his last appointment with the firm was as technical manager.

Mervyn Larkin on July 1. Larkin, formerly chairman of Motorola and director of its semiconductor division, will be based in Swindon. He has held senior technical management positions with Mullard, Waveringhouse and Texas Instruments, and his speciality has been semiconductor research.

MDS Data Processing, the UK subsidiary of Mohawk Data Sciences Corp, has appointed Tom Duddy as director of marketing. He joins the company from Data 100, where he has held regional sales manager, and has held sales positions with SPI and NatWest's Centreline.

Neil Osborn has been appointed to the position of systems and administration manager with Antocks Linn. He was formerly a freelance consultant working on the development of application programs, and is a member of the IDPM. His position is a new one.

Norman Shiff has become a sales executive with Zygal Dynamics. Former appointments were as design engineer with Data Dynamics, and working on telex and viewdata with GEC.

By Judith Morris



Mike Briercliffe has joined Systime as marketing manager for automotive and distribution products. He previously worked for Applaryard of Harrogate as parts manager, and eventually was responsible for implementation and running of the first Systime system to be used by British Leyland.

Richard Bale becomes business development manager of Tynshare UK, a newly-created position. He is replaced as West London branch manager by Bob Lewis.

David Spicer has been made UK sales manager with the commercial systems division of Computer Automation. He is replaced as Southern region sales manager by John Milway, formerly an area sales manager. Mike Marling becomes Northern region sales manager, having previously held sales management positions with Olivetti, Univas and MCS.

John Parr, formerly a service engineer with Technomat, has joined Euro Electronic Instruments as a sales engineer.

Dave Robinson of National Semiconductor at Greenock has been promoted from production manager for CMOS products to product line manager for logic water manufacturing.

John Phelan, previously a programmer with Quadrant Software, has joined Rediffon Computers as a systems analyst for the Northern branch. Maurice Foster, who has been a management consultant for 17 years, has become credit manager with Rediffon, and Robin Muir has left Borecoughs, where he was a factory manager, to become territory manager of Rediffon's Scottish branch.

Brian Tobias becomes UK sales manager of AVX and Alkon Hamilton becomes UK account manager.

Lawrence McNulty, formerly Kinzie's Manchester branch manager, has been appointed applications specialist, London with the company.

Charles Spotswood has been appointed as Atlantic Computer Leasing as South West area sales manager, and will report directly to the UK sales director. He was formerly sales manager of the oil division of BOC Datastore.

DIARY

JUNE 27 Introduction to database. North-East London Polytechnic, Barking. Details 01-599 5141 ext 49, 01-599 5055.

JUNE 28 Interactive project management, seminar. Dr James H. Gordon, Atkins On-Line. Midland Hotel, Manchester. Details David Lloyd, 0925 34118.

JULY 2-8 CAD and manufacture of electronic components, circuits and systems, conference. IEE, BCS and others. University of Sussex, Brighton.

JULY 4 Legal information, problems and solutions. BCS Information Retrieval and Law Group. City University, London EC1 1400.

Relational databases. North-East London Polytechnic, Barking. Details 01-599 5141 ext 49, 01-599 5055.

JULY 6-11 Consumer electronics, symposium. Society of Electronic and Radio Technicians. University of Essex, Colchester.

JULY 16-19 Operational data security, workshop. Operational Data Security Corp. Hotel Zurich, Zurich, Switzerland.

AN award has been made to ICL for the best Annual Report to Employees. It is the George Walker Trophy, awarded annually by the British Association of Industrial Editors.

The 53 entries were judged by Michael Lafferty of the Financial Times, whose comments on the winner included "Less patronising than any other report... does not stray away from profit... devotes a page to shareholders, a page to pensions... scores well in all its ranking areas."

Lafferty also praised the design of ICL's report, which was carried out by John Townsley Design Associates.

Our picture shows Don Louth, editor of ICL's report, with the George Walker Trophy.

Thomas Fay, previously Mobil's general manager of public relations in New York, has been made vice-president of communication with TRW, and also takes responsibility for TRW's European corporate office in London.

Cineware File

by Don

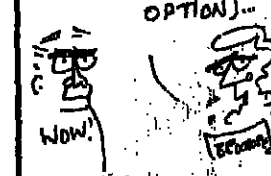
I'VE JUST BEEN OVER TO THE NCC...



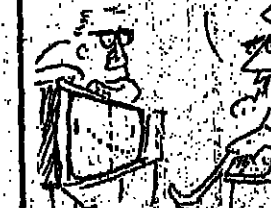
...AND ANTICIPATING MY POST-BUDGET TAX REBATE...



...ORDERED A 2-MEGABYTE, COO (WITH BUBBLE MEMORY OPTION)...



...FRONT-END TO MY TV GAME REPERTORY...



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- 4 Prices include 90 days return to depot warranty.
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CARTRIDGE DISC DRIVES AND CONTROLLERS

PART NO.	DESCRIPTION	PRICE
00-7301	2.4MB Disc Controller	£1600
00-7302	4.8MB Disc Controller	£1800
00-7304	2.4MB Disc Controller for Data General	£1250
00-7305	2.4MB Disc Drive	£2100
00-7306	4.8MB Disc Drive	£2250
00-7308	PSU for 7305 & 7306 Disc Drives	£300
00-7311	Storage Module Controller	£4150
00-7360	32MB Storage Module Disc Drive	£4500
00-7362	64MB Storage Module Disc Drive	£5800
00-7364	128MB Storage Module Disc Drive	TBA
00-7366	256MB Storage Module Disc Drive	TBA
00-7303	RK05 Adaptor Cable	£45
00-7348	Refurbished 40MB Cartridge Disc Drive CDC9746	£4500
00-7320	Refurbished 20MB Cartridge Disc Drive Memorex 660	£4000
00-7310	Disc Controller for 7320/7348 Disc Drives	£3000
00-7312	High Quality performance specification storage module controller for 7362, 7364 storage module disc drives	£7000
00-7359	Storage Module Disc Sub-System Includes 1x 7312 Controller, 1x 7364 128MB SMD all cables, connectors and free-standing cabinet	£24000
00-7300	Short Disc Drive Cabinet	£400

PAPER TAPE AND CARD DEVICES

PART NO.	DESCRIPTION	PRICE
00-7600	Paper Tape Reader 350 cps with PDP11 Interface	£1386
00-7601	Paper Tape Reader 500 cps with PDP11 Interface	£1420
00-7602	Paper Tape Reader 700 cps with PDP11 Interface	£1648
00-7603	Paper Tape Station including 350 cps Reader 70 cps Punch, PDP11 Interface	£3398
00-7604	Paper Tape Station including 700 cps Reader 70 cps Punch PDP11 Interface	£3480
00-7660	300 cpm Punched Card Reader	£2550
00-7661	300 cpm Punch Hole/Optical Mark Sense Reader & PDP11 Interface	£3354
00-7632	EIA RS232-C Serial Interface for 7603/7604	£325
00-7612	Interface for 7660	£410

LS11 COMPATIBLES

PART NO.	DESCRIPTION	PRICE
00-7900	Serial Asynchronous programme selectable UART parameters and baud rates (75 to 19,200), switch selectable address and vector RS232 or 20ma, LS11-OBUS compatible, one dual height slot	£160
00-7901	Dual DLY-11 Asynchronous Interfaces	£193
00-7902	General Purpose Parallel I/O Module: 16 bits control; LS11-OBUS compatible, one dual height slot	£126
00-7903	DRY-11-B 16 bit parallel interface DMA	£380
00-7904	16 KW Mos Memory	£245
00-7905	64K byte Mos Memory: 300 Nanosecond access, 450 nanosecond cycle; card extractors, LS11-OBUS compatible; one quad height slot	£1050
00-7906	Cartridge Disc Controller: Interfaces most RK05 compatible disc drives to LS11 includes cable, one quad slot	£1650
00-7907	Floppy Disc Controller: LS11 for most 8 inch floppy disc drives Uses Group Record Coding for storage of up to 650K bytes per disc disc Controls up to 4 drives	£1080
00-7908	Disc sub-system	£2575
00-7909	Line Printer Controller: parallel interface for electronics, data 100, datapoints and other line printers; includes 8 meter data cable; LS11-OBUS compatible; one dual height slot	£195
00-7911	Multiple serial interface, 4	£24250
00-7912	Asynchronous serial I/F on one dual card one serial line may be used to drive parallel printer	£385
00-7913	Card cage and backplane: 8 dual (16 dual) height sockets for easy module insertion. 10.5 x 4.64 inches x 11.62 inches	£250
00-7914	LS11 Microcomputer: 61,440 bytes RAM operator's console, line frequency clock, asynchronous serial I/O module, extended instruction set, floating point arithmetic, EPROM sockets, CMOS terminator, 8 quad slot backplane and switching power supplies. Eleven extra dual slots	£2647
00-7915	Terminator/Bootstrapper: Card module: provides LS11-OBUS termination; power-up sequencing; front panel halt/enhance switch and indicator; real-time clock; PROM sockets; one dual height slot	£200

MEMORIES AND INTERFACES

PART NO.	DESCRIPTION	PRICE
00-7232	16KW DEC. Mos Memory MS1MP	£700
00-7235	16KW DEC. Core Memory MM1MP	£1200
00-7237	8K DEC. Core Memory	£850
00-7236	PM1116 16KW Plessey Core	£1100
00-7264	32KW Fungus Mos Memory	£1200
00-7265	64KW Fungus Mos Memory	£2000
00-7266	256KB PDP11/70 Memory including chassis power supplies etc.	£10150
00-7267	512KB PDP 11/70 Memory including chassis power supplies etc.	£14540
00-7268	1 megabyte PDP 11/70 Memory including chassis power supplies etc.	£24250
00-7217	M7850 Parity Module	£100
00-7820	Single Asynchronous Interface	£385
00-7821	Single Asynchronous Interface with clock	£385
00-7822	Dual Asynchronous Interface (2 discrete lines)	£485
00-7823	Dual Asynchronous Interface with full modem control	£535
00-7824	Quad Asynchronous Interface 20MA/EIA (4 discrete lines)	£600
00-7825	Octo Asynchronous Interface 20MA/EIA (8 discrete lines)	£1200
00-7826	Byte interface 8 bit input/output	£400
00-7827	Buffered input/output interface	£300
00-7828	General purpose interface	£350
00-7830	16 Channel Asynchronous multiplexer	£3050
00-7831	From Memory 2K block Microprocessor Diabolo	£450
00-7832	Hilype Serialiser	£400
00-7833	Card Reader Interface	£400

PRINTERS AND INTERFACES

PART NO.	DESCRIPTION	PRICE
00-7505	Line Printer I/F short	£385
00-7506	Line Printer I/F Long Line Driver	£385
00-7510	Hyperm KSR Terminal	£2800
00-7735	30 CPS LA36 20MA	£895
00-7736	30 CPS LA36 EIA	£1010
00-7534	LA 36 Conversion Module to convert LA 36 to 1200 baud terminal with many added features	£545
00-7530	300 LPM Band Printer	£4200
00-7560	600 LPM Band Printer	£5400
00-7590	Superterm KSR Terminal 60 CPS OPT 'D'	£1265
00-7741	Superterm KSR Terminal 120 CPS OPT 'D'	£1600
00-7742	Pedestal for 7740/7741	£115

MAGNETIC TAPES AND CONTROLLERS

PART NO.	DESCRIPTION	PRICE
00-7419	Controller and 1st 9 Track NRZ1 Mini Tape Deck	£4185
00-7418	Additional Deck for 7419	£2221
00-7430	Controller & 1st 9 Track NRZ1/PE Switchable Maxi Tape Deck	£5780
00-7431	Additional Deck for 7430	£2408
00-7400	Cabinet to house items mentioned above	£580

VISUAL DISPLAY UNITS

PART NO.	DESCRIPTION	PRICE
00-7258	Fungus MKI VDU & Keyboard	£885
00-7753	Fungus MKI VDU & Keyboard	£885
00-7754	Fungus MKII Micro-processor based VDU	£895

MISCELLANEOUS ITEMS

PART NO.	DESCRIPTION	PRICE
00-7004	Four Slot Back plane	£210
00-7005	9 slot back plane	£365
00-7049	Unibus jumper	£75
00-7085	15PO Unibus cable	£130
00-7810	EPPO Protect Cable	£75
00-7230	Ball expansion chassis	£1600

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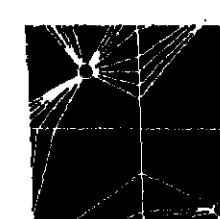


Course 142 - Five days

This unique course is specifically designed for engineers and senior technicians involved in production testing, field service, and design of microprocessor-based systems. The course provides these personnel with the practical knowledge they require, including an in-depth understanding of: a) microprocessor software and hardware; b) how to apply the most powerful microprocessor debugging techniques; and c) how to use microprocessor troubleshooting equipment. The course also provides concrete recommendations for the design of testable microprocessor systems.

LONDON
September 24-28

Distributed Processing & Computer Networks

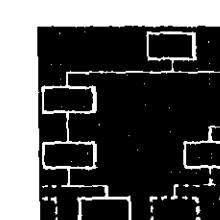


Course 350 - Four days

This course provides a comprehensive introduction to distributed processing and computer network system design techniques. It covers the individual elements of a distributed processing system and how these elements are synthesized to form a system which best meets the application specific objectives. Participants will learn how to analyze their own requirements, and how to select hardware/software systems which will meet those requirements. The course will be particularly valuable to those involved in the selection and management of distributed processing systems.

LONDON
September 18-21

Structured Programming



Course 320 - Four days

The course will provide in depth exposure to structured design and structured programming tools and procedures. The underlying theme of the course is the development of skills which will enable the production of structured programs at minimum cost, while planning for program changes, modifications and reducing maintenance costs. Participants will develop a clear understanding of the concepts and applications of structured methodology, and will learn to evaluate various types of structured programming techniques.

LONDON
September 18-21

Computer Graphics State of the Art Techniques and Applications



Course 365 - Four days

Hardware elements of computer graphics systems are presented at the level required for detailed system specification, selection and acquisition. Software techniques for computer graphic systems are developed from the elementary level of line generation and continue through advanced approaches to animated three-dimensional color displays with hidden surface removal. Off-the-shelf, commercially available software packages are analyzed, and evaluated. Emphasis is placed on hardware/software tradeoffs, cost effectiveness and the advantages and limitations of alternative approaches.

LONDON
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Versatile memory system

A NEW expansion memory system based around a new and flexible bus structure has been introduced by Intel. Known as the Series 90, the company claims that it can cope with a wide range of potential memory expansion requirements, as well as new memory technologies as they emerge.

The new bus structure, designated the BXP bus, has been designed specifically for use in memory systems. It contains 24 address lines, four module address lines and a bus select function. The address lines allow addressing up to 16 Megawords for each memory module, of which there can be up to 16. The bus select function allows expansion to more than one BXP-based system.

Word sizes ranging from 22 bits to 88 bits, without error correction, and 20 to 80 bits with error correction, can be accommodated by the bus.

Tandy revamps TRS-80 for small business market

IN a move away from the home computer market, Tandy is to launch a completely revamped version of its TRS-80 microcomputer system aimed specifically at the small business market.

Production of the new system, to be called the TRS-80 Model II, is scheduled to start in July, though it is unlikely to be available in the UK before February, 1980.

The revamped hardware for the Model II is considerably reworked from the original system, which was aimed at a home market that, even in the US, is now

being doubted as a long term area of survival.

The major changes include the provision of an integral video display, rather than a separate monitor of the Model I. This will provide 80 characters per line in both upper and lower case.

It also features integral 8-inch floppy disc drives, with up to three being possible, offering around 2M bytes of disc storage capacity. An optional bi-directional printer is also scheduled to be available for the new system.

The minimum internal memory is 32K bytes, expandable up to 64K bytes, and the majority of software for the system will use Tandy's Level 3 extended Basic. This runs in 24K bytes of the system's memory. The company expects to offer a range of general-purpose programs for the system.

Pricing of the hardware, though still to be finalised for the UK introduction next year, already looks competitive. Tandy in this country expects to be selling just one version of the Model II, equipped with

64K bytes of memory and three floppy disc drives with an anticipated price between £4,500 and £5,500.

Marketing in the UK will not be through Tandy's existing network of audio equipment stores. The company is planning to open eight specialist outlets around the country, dedicated to selling and supporting both Model I and Model II of the TRS-80 range. Though none has been sited as yet, Tandy expects to have stores in most major cities, including London, Manchester, Leeds, Birmingham and Bristol.

September launch

TEN or 20M byte Cromemco microcomputer systems should be available in this country in September. Comart, the company's UK distributor, is currently evaluating a disc-based system that uses Winchester technology discs. Though pricing is not yet available, Comart expects a 64K byte system with 10M bytes of disc storage to cost about £8,500.

Will a £100 gamble find the perfect program?

AN idea that could lead to a software vetting service for personal computer systems is to be tried on British programmers by Jerry Thompson, managing director of Shade Computer Services. And he is willing to

back the idea with £100 of his own money.

Thompson claims that the majority of software currently available for personal computer systems such as the Pet, Apple II and so on is not satisfactory.

He is offering the money as a prize to the writer of the first personal computer application program that he fails to crash within a week. He feels that it should be interesting to see whether programmers have enough faith in their products to take the gamble.

For the programs that are crashed, Thompson is willing to provide a short written report on why and where it happened, for a fee of £10. A more detailed report, giving methods of rectifying the faults in the programs, will also be available. But for this, Thompson will charge standard consultancy rates.

"I will be delighted if I have to pay out the £100," Thompson said last week at Shade's Caine, Wiltshire offices. "But there is a lot wrong with many current packaged programs, and their marketing."

"A £25 payroll program running on a £800 microcomputer is not the same as a £1,000 program running on a £8,000 machine. You don't buy a Mini and expect the appointments and performance of a Ferrari," he said. "However, much of the sales and marketing seems to indicate that this is so, and the customers get caught out."

Referring to Wiltshire's close association with meat, he said, "You don't buy bad meat from the same butcher twice." A succinct expression of his views on

current software.

His ground rules for "entry" into the test are that it must be a British-written microcomputer package, preferably capable of running either on the Commodore Pet or under the CP/M operating system. It must be available for the general market, for use by the general public (rather than a computer "specialist") and be intended for commercial and business environments. The program must also be well documented.

A full copy of the rules can be obtained by sending a stamped addressed envelope to Shade, at 1 Patford Street, Caine, Wills SN11 0EF.

Among the immediate modes of failure in the test will be when any inputs or outputs on the program do not match the documentation, and where incorrect keying brings about such statements as "Syntax Error," without a recovery routine.

Thompson hopes that his challenge will lead to the establishment of some form of permanent software vetting service, so that the general standard of programs available for microcomputer systems can be raised. He is himself aware that, no matter how good a programmer an individual thinks he is, some one else can nearly always find bugs in his programs.



The Radiocode clock.

Radiocode clock offers atomic accuracy standards

A NOVEL method of maintaining a constant time reference for computer systems, that does not suffer the vagaries of system downtime or power failure, has been developed by Circuit Services in Ruislip.

It brings to computing the accuracy associated with atomic time standards, and requires no intervention from computer room staff to operate.

Circuit Services' development, called the Radiocode clock, is a fully self-contained electronic clock, referenced directly to a Cesium atomic clock in Rugby. The referencing is achieved by radio on a high-power 60kHz transmission from Rugby that can be received anywhere in the UK.

This clock itself has been available for some time, and is in use in such establishments as the National Physical Laboratory. The company has, however, now produced a serial Asci interface suitable for direct connection to a computer system. This interface takes the 24-bit parallel BCD output of the clock and converts it to RS232C compatible Asci, with switchable baud rates between 75 and 1,200 baud.

As the clock is continually referenced by radio to the atomic clock, and has an internal crystal for running without receiving the Rugby signal, no intervention by computer room staff is needed.

PO software rewritten by Insac for viewdata in US

THE viewdata system sold by Insac to GTE in the US (CW, June 14), is significantly different from the Post Office Prestel system on which it is based, and underlines the capability of Insac as an independent operator.

The Post Office software has been entirely rewritten by Insac to run on the Digital Equipment PDP-11 minicomputer, with appropriate billing and communications adaptations for the US market. The US software was designed by Insac itself, and coded by Insac member SDI. The US system will operate with a full alphanumeric keyboard from the start, whereas the current version of Prestel is designed for numeric keypad, with alpha keyboard a subsequent optional enhancement.

Since CCITT has adopted the term Videotex as the generic name for Prestel-type systems, GTE has adopted Viewdata as the name for its service. Two US market trials are planned: a business service this summer, and a subsequent domestic trial. The Insac Viewdata system is fully compatible with terminals used on Prestel, but GTE will initially offer terminals from Intelligent Systems Corp.

GTE is regarded as a particularly attractive partner on viewdata because it has several relevant interests. It is the second largest telephone company in the US after AT&T (although the service will of course be US wide, not confined to areas where GTE is the telephone operator). It manufactures TV sets in its Sylvania subsidiary, an electronic equipment manufacturer, and also operates several database services.

Conditions put by the US Federal Communications Commission on GTE's proposed \$55 million acquisition of packet-switched network operator

Telenet might have jeopardised that deal, but last week, the FCC relaxed its conditions at GTE's request, and the acquisition has now been completed. Telenet, although not essential to GTE's offering of a viewdata service, will be an appropriate medium on which to carry the service.

The agreement covers viewdata service in both the US and Canada, and GTE plans to offer the service to users on a local call basis.

What is not clear is the nature of the service to be offered. A spokesman for GTE talked in terms of an information service similar to Prestel, with organisations like newspapers, information services and publishers signing up as information providers. However other people close to the discussions indicate that the business service might be more oriented towards the Closed User Group concept, where a company uses viewdata as a means to distribute information to branch offices and so forth; applications like credit authorisation are also being considered. For the residential market, ideas which have been considered include using viewdata to pay bills and carry out banking transactions, perhaps with terminals installed communally in apartment blocks rather than in the home. An obvious domestic application is working out personal taxation.

The use of a packet-switched service such as Telenet or Tymnet to carry viewdata will make charges distant-independent, providing a framework for a national service.

Marketing of viewdata will be handled jointly by GTE and Insac Viewdata Inc, yet another US Insac company. The latter will be offering in-house viewdata systems for companies which will be similar to the private systems offered by com-

panies like GEC and Philips in the UK. Insac will also promote the specialised services which member companies can offer on the GTE viewdata system, such as CAP's Telesoftware, which enables viewdata users to call up specialised software packages and have them downloaded to their local viewdata terminal.

The agreement with GTE gives a big boost to the Post Office standard for videotex systems. Already adopted in West Germany, Holland, Hong Kong and Austria as well as the UK, it is close to becoming a de facto international standard.

CONTROL DATA over the past few months has invested a considerable sum in improving its European data services operation. The major changes are the installation of five new computer systems and the Network Operating System, and the provision of more powerful connecting links with the rest of its worldwide network.

The new computers include

the IBM 3031 just installed at the company's Barnet centre (CW, May 3), Cyber 175s in Brussels and Stockholm, and two of the IBM-compatible Omega 480s in Brussels. They bring the total of computers in the network up to 37.

In addition to providing more capacity for European users, the new systems will also enable Control Data to provide more user software. A number of packages are currently available only to US customers, and some of them will be modified and released in Europe over the next year.

Connection between the European centres in London, Brussels and Stockholm has been enhanced by the provision of an automatic switchover facility. Other European centres are to be linked into the network in the same way. The data centre at Rijswijk, Holland, is scheduled for connection before the end of the year, while the centres in Paris and Frankfurt will complete the enhancement during 1980.

On each of the first three days of the show there will be a one-day seminar covering the basics of microfilm, including COM. It costs £48.50.

On each of the first three days of the show there will be a one-day seminar covering the basics of microfilm, including COM. It costs £48.50.

Microforum Europe 79 opens at Wembley

BILLED as the most important microfilm event to be held outside the US, next week's Microforum Europe 79 at the Wembley Conference Centre, London, should have something to interest most computer users with a paper storage and retrieval problem. The show runs from June 28 to 29.

Only a handful of organisations offering computer output microfilm bureau services will be appearing at the show, but most of the COM recorder manufacturers will be there to talk to computer users who are thinking of investing in their own COM unit. There will also be a wide

range of other hardware designed for COM users — like readers, reader printers and automated retrieval systems.

Euromat Data, the biggest COM bureau in Europe, has taken a stand at Microforum to talk about its 24-hour turnaround service for converting magnetic tape to microfilm or film, including its 72X reduction ratio service which squeezes 880 pages on to a single microfilm.

Datagraphix, the firm that specialises in COM recording equipment, will demonstrate its low-cost Autocom recorder in its online and stand-alone versions as

well as the powerful Model 4880 COM configuration which comes with its own tape drives, card reader and line printer.

Datagraphix competitor, NCR, will demonstrate its 643-101 system which can deliver individual processed microfilm in one's operation, while three other COM equipment suppliers, Kodak, Bell and Howell and Agfa-Gevaert, will exhibit readers, retrieval systems and duplicators.

On each of the first three days of the show there will be a one-day seminar covering the basics of microfilm, including COM. It costs £48.50.

Q. Who is MSA (Management Science America) Limited?

A. We are part of MSA Inc., a worldwide computer software company developing and supporting financial applications.

Q. What do we do?

A. MSA provides a complete range of application systems covering cash management, financial management and personnel management to more than 3500 companies around the world.

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A. Whether you need to develop an entirely new system or whether your existing systems have reached the saturation point and must be re-written, using a proven generalised software package will help you overcome the problems of:

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Q. What will this mean to you?

A. The use of a proven generalised software package will permit Immediate Implementation.

Q. What are the MSA application systems?

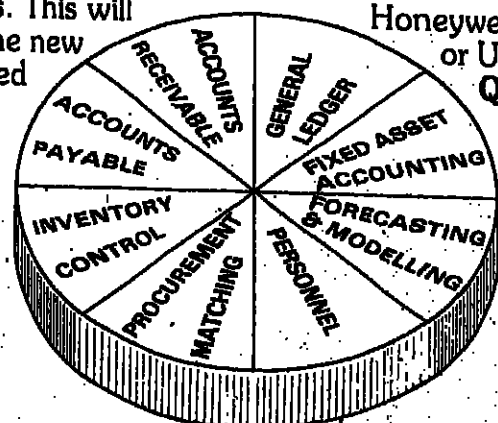
A. (see diagram).

Q. Who can use MSA?

A. Anyone in manufacturing, banking, insurance, building societies, distribution, transportation and Government utilising IBM, ICL, Honeywell, Burroughs, NCR or Univac hardware.

Q. How do you find out more?

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MEMOREX

12-nation speed-up on standards likely

STANDARDISATION of computing at an international level should be speeded up following an agreement on co-operation between the heads of 12 different national computing centres.

The directors, who met in Oslo, agreed to exchange information on the subject regularly to encourage a common approach, and to support national standardisation activities, particularly in the fields of programming languages, networks, and quality assurance for software.

David Firnberg, director of the NCC in the UK, was at the

meeting, together with heads of corresponding organisations in such countries as France, West Germany, Japan, Spain and Italy.

The US was not represented, but two Communist countries, Hungary and Czechoslovakia, were.

An agreement on exchange of information and co-operation was also reached covering the area of the social impact of information technology. Each centre will appoint a "contact man" to look after information covering research projects and reports.

The NCC in the UK is to carry out a survey of the use of computers in education in the various countries, particularly in secondary schools. This is to help the national centres promote such computing.

The directors also agreed to exchange information on user needs with regard to electronic office systems, on national research and development programmes, on the applications of micros, and on systems analysis.

The next meeting is to be held in Japan in October 1980, just before the IFIP World Conference.

Recruitment firm sets up computer consultancy

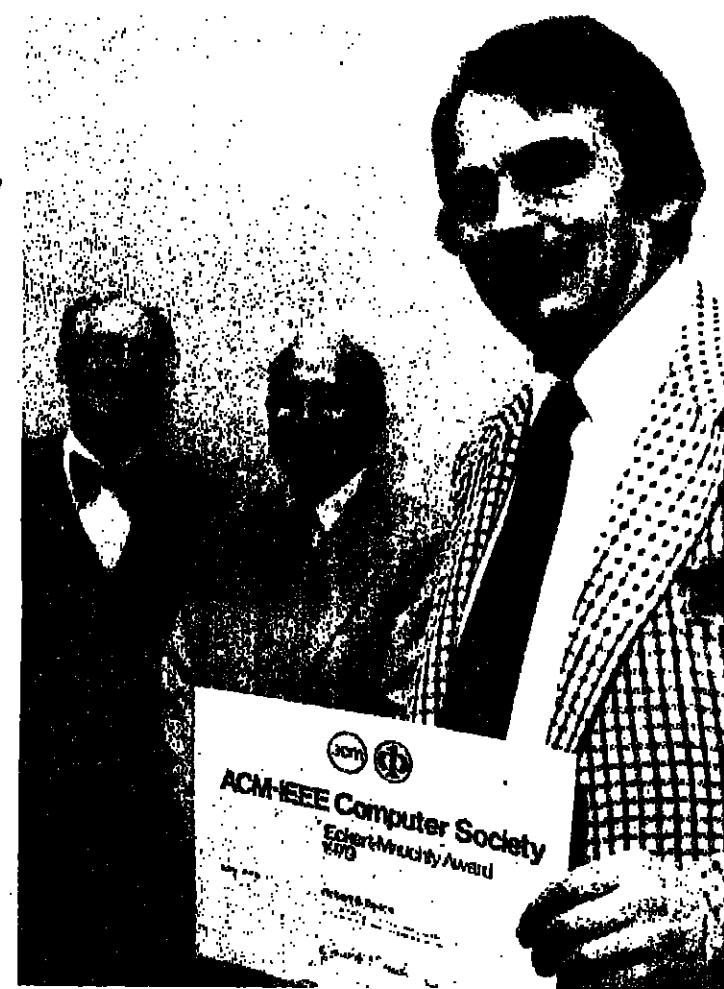
A COMPUTER consultancy division has been added to the executive recruitment company, Peter Counsel.

The new company offers a variety of services ranging from guidance on equipment selection

to a complete "turnkey" operation where required. The services are aimed at small and medium-sized businesses.

The consultancy operation will be headed by Derek Lightfoot, who is a former consultant

with Scicon and was until recently management services manager with Roneo Vickers. The company hopes to maintain its independence from any hardware or software in order to offer an objective approach.



ACM award goes to Burroughs director

DIRECTOR of Systems Organisation Research at Burroughs, Robert Barton has become the first recipient of the Eckert-Mauchly Computer Architect Award presented jointly by the Association for Computing Machinery and the IEEE Computer Society.

Barton has been with Burroughs for 25 years, and led the team that designed the B5000, the firm's first large machine and a trailblazer in the techniques of multiprogramming.

The award, which will be presented annually in recognition of achievement in the field of computer design, is named in honour of Presper Eckert and John Mauchly who designed and built Eniac and Univac I, the first American computers. They were in Philadelphia to present Barton with his certificate. It was nearby at the University of Pennsylvania in 1949 that Eniac first started life.

In his citation Barton was described as having made computer systems "simpler to understand, simpler to engineer and construct, and easier to use for everyone's benefit."

Robert S. Barton (foreground), director of Systems Organisation Research at Burroughs receives the Eckert-Mauchly Computer Architect Award from Drs John W. Mauchly (left) and J. Presper Eckert who in 1949 co-invented the first American computers.

ICL makes debut at word processing show with the 7700

A NEWCOMER to the International Word Processing Exhibition this year will be ICL, which is demonstrating its new 7700 information processing system, combining WP and DP. By a link to a mainframe in Reading the firm intends to show an electronic mail facility working with the two 7700s on the stand.

The exhibition will be at Wembley Conference Centre from July 10 to 13, and among the 42 exhibitors will be most of the word processor manufacturers in Europe.

At the same time a series of half-day seminars is being run by online on various technical and applications aspects of the hus-

ness, together with two whole-day conferences, one on "The people factor" and the other a look to the future, "The electronic office."

Topics covered by the seminars include an introduction for the first-time user, advice on selecting equipment, a review of the latest equipment, and WP supervision. Applications areas covered are three: the professions, the public sector and the financial sector.

To register for the exhibition, contact BETA at 109 Kingsway, London WC2B 6PU, and for the seminars, Online at Cleveland Road, Uxbridge UB8 2DD.

Mostek memory boards could extend PDP-8 life

A NEW range of add-in memory boards has been introduced by Mostek that could greatly extend the working life of the faithful Digital Equipment PDP-8 computer.

Known as the MK 8009 family, it consists of five boards, offering 16K, 32K, 48K, 64K and 128K words of 12 bits each. As yet, UK pricing is not settled.

The family adds to the growing range of general purpose memory boards produced by Mostek, each of which makes use of the company's 200 nanosecond, 16K bit dynamic random access memory components.

There is some speculation that Mostek is considering using some of these general purpose boards to produce a replacement fixed head disc memory system, similar to that planned by Intel (CW, April 12).

A spokesman for Mostek said this week that the company is studying the fixed head disc marketplace, among others, but that no positive moves are planned at present.

Mostek last week realised nearly \$17.5 million from the sale of 750,000 shares on the US stock market. It seems likely that the money will be invested in the company's new NMOS wafer fabrication facility, being built in Colorado.

Part-time degree course

A PART-TIME degree course in computer studies is to be introduced in September by Sheffield Polytechnic. A mixture of evening-only or daytime classes is available, with a programme of study normally lasting five years.

The course is intended for those already working in the computer industry. People with certain qualifications or experience may be exempted from up to two years of the five.

Danish president

AMDAHL European users have elected Ejner Dinesen of the Copenhagen bureau, I/S Datacentralen, as their president. The election took place in Copenhagen at the first meeting of the users group which was attended by 80 delegates. Speakers included AMDAHL chairman Dr Gene AMDAHL and John Lovin, president of the AMDAHL users group in the US.

NEW TERMINALS FROM DIGITAL EQUIPMENT

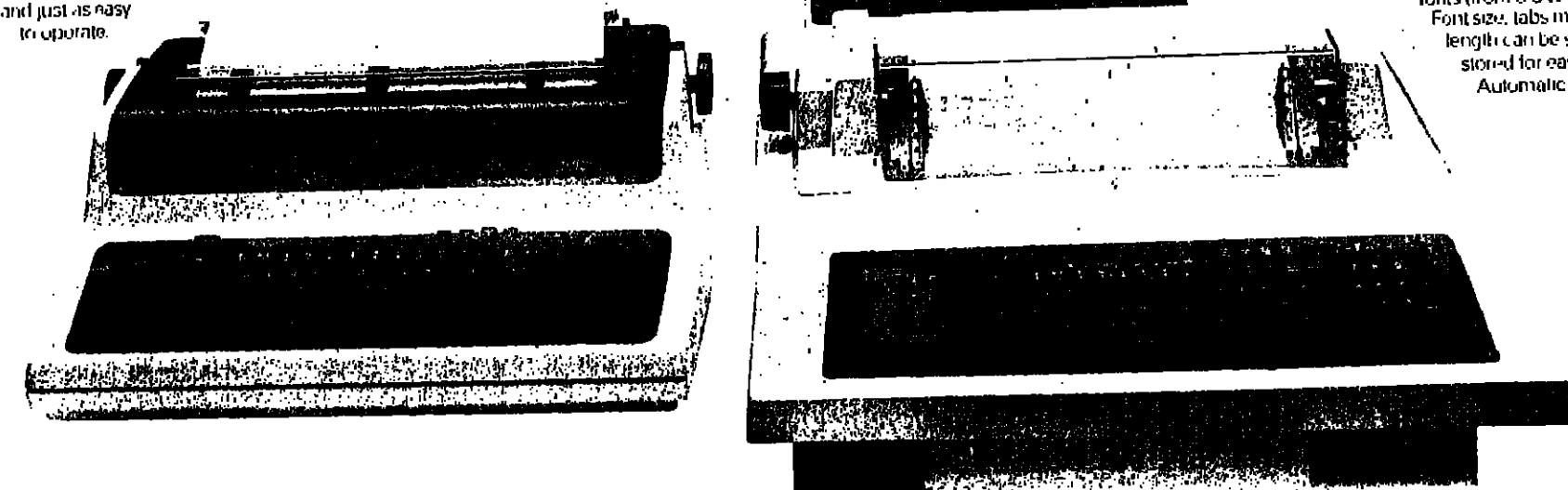
In technical terms, they look very good...

VT100/132. New video terminals. Up to 132-column width. Line-drawing capabilities. Up to 8600 baud rate. Exclusive "Slow Scroll" readability. Self-test diagnostics. Most functions set from detachable (up to 2 m) keyboard. VT132 adds editing capabilities.

PDT-11 intelligent terminals. PDP-11 technology. Can be programmed, clustered, equipped with mass storage and used in synchronous or asynchronous networks. Shown is PDT-11/150 with floppy disk drive, intelligence and memory. Use with any keyboard terminal. Not shown: PDT-11/130 (with memory and tape storage), PDT-11/110 (intelligent terminal with memory), both incorporating VT-100 VTR/keyboard features.

LA34. Tabletop DECwriter. 300 baud 30 cps. Choice of 4 compressed fonts (10 to inch up to 16.5). Cartridge ribbon. Roll-feed Numeric pad option. Smaller and lighter than most standard typewriters and just as easy to update.

LA120. High-performance terminal. Print speed 180 cps, baud rate selectable from 50 to 9,600 baud. (More than 45 user-selectable features relating to printing and formatting). Choice of eight compressed fonts (from 6.5 to 16.5 to inch). Font size, tabs margin and form length can be set at keyboard. Stored for easy recall. Automatic self-test.



In human terms, they feel even better.

Suddenly, the broadest range of terminals in the industry has got even bigger.

Major introductions. New video terminals. New hard-copyers. A totally new family of programmable terminals (PDT-11).

Terminals you can quickly combine into a common communications network, because their control codes are all part of one carefully thought out intercompatible standard.

All offer a wide range of communications interface options. Customer-assignable function keys. High commonality of parts, right down to standard IEC 435 line cord. All have switching regulators, for quieter, cooler operation. And for neater, more compact styling.

Human engineering specialists have colour-toned

each terminal to blend compatibly with the modern office environment. Keyboards are standard typewriter layout, with keys finger-sculpted and position-identified to maximise acceptability by any keyboard operator. Operator status lights are standard.

Still, these new terminals only represent a part of the total terminal family we have to offer. And if you haven't yet found out the advantages of dealing with the industry's only true "one-stop" terminal supplier, perhaps now is a very good time to find out.

We'll be very glad to send you data on all or any of these new terminals. And if you want to know more about existing terminals, like the well-known LA-180 line printer for example, just tick the "basket" box, too.

Digital, I'd like your Components Group to send me data on:
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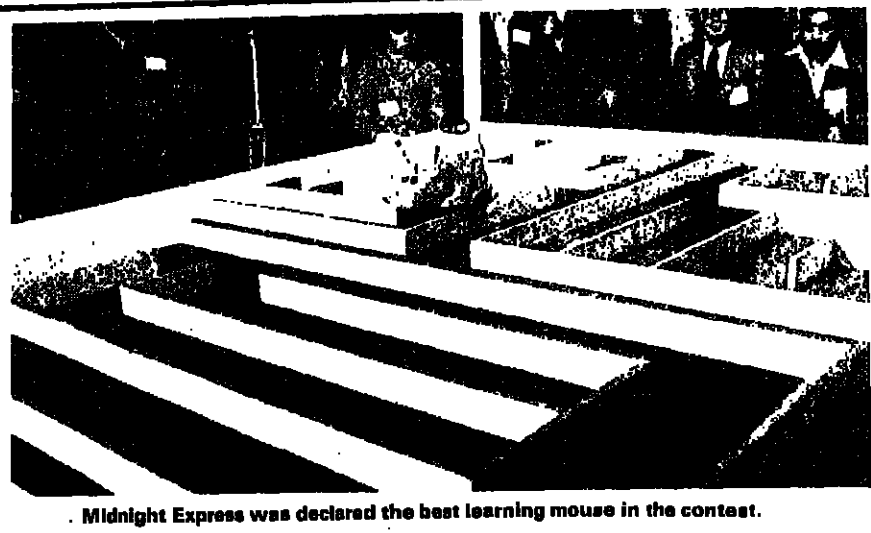
digital
Digital Equipment Co. Limited

Of mice and men— and machines as well

THE Moonlight specials from the Battelle Memorial Institute swept the maze board in the great Micro Mouse contest, which was one of the main attractions for visitors to the National Computing Conference in New York. It also proved to be a major event for many of the TV and newspaper journalists covering the show.

The contest started at last year's NCC and has been running throughout the year at various personal computer exhibitions. In the end, Moonlight Flash won the first prize of \$1,000 and Moonlight Express the prize for the best learning mouse.

The mice had to make their way through a maze. A few managed it. Some got half way and turned back. Most failed — or aborted, as the Americans say. The competition was part of the personal computing fair which was run for the third time in parallel with the main NCC exhibition.



Moonlight Express was declared the best learning mouse in the contest.

Micros shape DP's human face

"WE are introducing a David to challenge our own Goliaths," Univac president Richard Gehring told assembled journalists enjoying a plush breakfast at the Plaza Hotel when he introduced the new Univac 1100/60 series (CW, June 14). Meanwhile, elsewhere in New York, micro Davids were collecting their software stones and \$100 slings ready to challenge the entrenched computer industry and

computer professionals.

Gehring's reference to Univac's Goliath tried to span the pioneering computer work of J. Presper Eckert, who helped design Eniac, one of the first electronic computers, and who was present at the Plaza breakfast to witness the launch of a progeny of a power and capability beyond the dreams of 30 years ago.

But the 1100/60 is still part of

Malcolm Peltu looks at how the personal computing enthusiasts at the NCC in New York began teaching some old computer dogs some new human tricks

The industry tradition which was spawned by the early computers and is subject to the constraints imposed by having to

satisfy an existing customer base with a heavy investment in software and resources. The personal computer mar-

ket, however, is unrestrained by the past. It is being propelled by the grandchildren of the pioneers; and it is starting where the traditional computer industry has too often ended — with the "real user".

The personal computer exhibition and conference at the NCC is put into perspective by its relation to the mainstream exhibition and conference. In its own right, the personal computer market is of limited interest to the general computer industry.

However, every computer product designer should carefully take note of the way in which the personal computer market has spawned systems with genuinely easy to use, human interfaces.

MORE NEWS FROM THE NCC — PAGES 18 and 22

The Apple booth at the Hilton Hotel, for example, was ablaze with colour graphics and music synthesizers, with automated "paintboxes" and adds to composers — and with the bread and butter small business packages which take on an imaginative new light when dressed in time colours.

The importance of this human face of personal computing was vividly highlighted in a session in the main NCC conference on computing for chief executive officers. The panel included a professor from the Harvard Business School, business consultants and a vice-president from the Chase Manhattan Bank. Their view was generally a pessimistic one of the ability of chief executives to understand and use computers for their own applications in running the company.

Then, during question-time, personal computing guru Ted Nelson, author of Computer Lib, made the point that this gloomy view was a condemnation of the human engineering of existing systems. "What we want is interactive, graphic, vivid, clear, easy to use terminal interfaces. Then the chief executive and everyone else will be able to take advantage of computing power," Nelson commented.

To enthusiastic applause, he commented, "We do not need better computer products but better computer art."

In the 82 exhibits in the crowded personal computer exhibition hall in the Sheraton Hotel and its associated handful of private presentations, mainly from schoolchildren, there was far more ingenuity of computing application than in the four floors and over 400 exhibitors whose slick sales staff and booths provided the main focus for the visitors who swarmed through New York.

Bright ideas come to life

WALKING around the personal computer exhibition at the NCC, one would not be surprised to come across a scrawled sign stating "Micro-controlled bomb kit and rocket launcher, Charlie Brown Jr. 12."

At this year's exhibition there were two distinct personal computing sections: the stands showing the emerging array of personal computing equipment from purely commercial suppliers; and then, intermingled with these as well as in a special competition section, the presentations of individuals whose bright ideas had taken on micro form.

One of the most startling stands was set up by Amstar, the Radio Amateur Satellite Corp, which is about to launch the world's first personal computer "switchboard" into space.

Then there was Nicky Naimovich Jr, president of Parsec Inc., a science-oriented, Dallas-based corporation engaged in the study and practice of energy conservation. On display he had his Insal 8080 microcomputer exhibit showing how to calculate energy losses in a house and also a new house insulation material which Parsec is now marketing under the name of Therma-Insul. This is claimed to cut out the major cause of heat losses as identified by his program — cracks in the wall.

In addition to being president of Parsec, Naimovich Jr is also a high school student in Dallas, and, two years ago, at the age of 15, he was exhibiting his first micro development, a system to identify the times and places of the eclipses of the sun.

Elsewhere, artificial intelligence was well in evidence with Herb and Terrapin. Herb stands about three feet high and moves along like a Meccano Dabak. When it bumps into an object it reverses and wheel wobbles away. It is the invention of 16-year-old Holden Caine of New York.

Terrapin is a development of the Logo turtle artificial intelligence research work at the Massachusetts Institute of Technology and Edinburgh University.

The Logo Turtle project was concerned with the way in which a mobile "robot" could be used in teaching situations. An undergraduate at MIT thought this could be an interesting device for personal computer enthusiasts and he brought in a friend, David McClees, a Harvard graduate, to turn the turtle into a commercial product.

The result is Terrapin, marketed by Terrapin Inc in Boston, selling at \$800 for an assembled Turtle or \$400 for a kit which can be interfaced with most home computers.

One of the youngest exhibitors was 14-year-old Andrew Shonman, of New York, who had used his TRS-80 to develop a system which calculates and displays positions of the stars and moon.

The personal computer exhibition also put its money where its theory lies and used an Apple II as the basis of its own information and message service, provided by one of the numerous computer stores, Computer Mart of New Jersey. At this stage, however, all information system has yet to be developed to answer the most interesting question asked by the personal computing enthusiasts: what happens when the computer is not there? The whole of the exhibition

PERKIN-ELMER

DATA SYSTEMS NEWS

ISSUE NO 6

A new market leader

The new Perkin-Elmer Model 3220 second generation Supermini, launched here last month, is already establishing itself as the most successful product in the history of Perkin-Elmer's Computer Systems Division.

Corporate results hit new high

Perkin-Elmer's third quarter sales and profits continued the positive trends of the first two quarters. Sales for the quarter rose 26 per cent over the same period last year and totalled \$109.2 million.

Net income increased 40 per cent to total \$13.2 million. Sales for the nine months of \$518.4 million were 29 per cent above last year, while net income advanced 57 per cent to \$49.9 million.

As has been the case in the first two quarters, each of the company's five business units contributed to both the sales and profit gains.

Orders through the nine months were up 34 per cent over the same period last year and totalled \$611 million.

3200Team under starters orders

'Out in front with the 3200 Team' was the theme at the Perkin-Elmer International Sales Conference at the Skyline Hotel, Heathrow, last month, at which the main event was the launch of the new Series 3200 range of Superminis.

Attended by company personnel and distributors from all over Europe, the Middle East and Africa, as well as the UK, USA, Canada and Japan, the Conference established and briefed teams of professionals to sell and support the 3200 Series, which has already made a major impact in the USA since its release there in February.

When the enquirer knows only the item identity.

Commissioning trials of a new computer system at Leicester Polytechnic have commenced. Based on a Perkin-Elmer Model 6/16 Mini, the system is supporting the Library lending services and is the outcome of an extended evaluation by library and computer staff.

The study also led to the change-over to automated catalogue on microfiche for the library of some 100,000 books and other reference media.

TRANSACTION PROCESSING

The application is, in fact, shared between two computers. Real-time transaction processing, enquiries and controls are managed by the Model 6/16, whilst follow-up batch processing is handled by an existing B6700 mainframe on the basis of a magnetic tape journal of each day's transactions.

The heart of the real-time system is the 'Loans' file and with it the directly associated 'Index' file, the purpose of which is to provide a cross-reference to the loan record in the 'Loans' file.

Since its USA release at the end of February, orders worth in excess of \$3.5 million, representing some 40 machines, have been booked.

Judging by the enthusiastic reaction of visitors to the US National Computing Conference in New York earlier this month, where the Model 3220 had its first public showing, this rate of orders is certain to accelerate rapidly in the near future.

PRICE BREAKTHROUGH

The new Model 3220 offers a truly exceptional combination of computing power, reliability, upward compatibility and mature software at price-levels hitherto associated with very much less sophisticated products, ranging from £23,115 for the simplest configuration with 256k of memory to £40,770 with 1Mb of memory.

This must be regarded as a major opportunity to obtain the benefits of 32-bit computing power by many end-users. OIM's and system houses concerned with interactive and real-time applications in the business, scientific, automation and data communications fields.

FIELD-PROVEN SOFTWARE

There is an extensive list of field-proven Perkin-Elmer 32-bit software products all available for use on the Model 3220. This includes the OS/32 real-time multitasking operating system, ITC transaction controller, ITAM for data communications, superfast FORTRAN VII, COBOL, BASIC and many more. This represents a massive 500 man-years of 32-bit software development, quite without parallel in the mini-computer industry which has, in general, only just started to grasp the significance of 32-bit architecture.

UNIQUE EXPERIENCE

Perkin-Elmer introduced the world's first 32-bit Supermini as long ago as 1973 and produced the first mini-programmable mini, the first mini to directly address 1Mb of memory and the first mini with writable control store. There are now some 2500 Perkin-Elmer supermini systems installed around the world. This wealth of experience, obtained and consolidated where it really matters, in the field, offers the prospective user a level of solid assurance which is, quite simply, unobtainable elsewhere.

Library management at Leicester Polytechnic

When the enquirer knows only the item identity.

Commissioning trials of a new computer system at Leicester Polytechnic have commenced. Based on a Perkin-Elmer Model 6/16 Mini, the system is supporting the Library lending services and is the outcome of an extended evaluation by library and computer staff.

TRANSACTION PROCESSING

The application is, in fact, shared between two computers. Real-time transaction processing, enquiries and controls are managed by the Model 6/16, whilst follow-up batch processing is handled by an existing B6700 mainframe on the basis of a magnetic tape journal of each day's transactions.

The heart of the real-time system is the 'Loans' file and with it the directly associated 'Index' file, the purpose of which is to provide a cross-reference to the loan record in the 'Loans' file.

REDUCED LOSSES

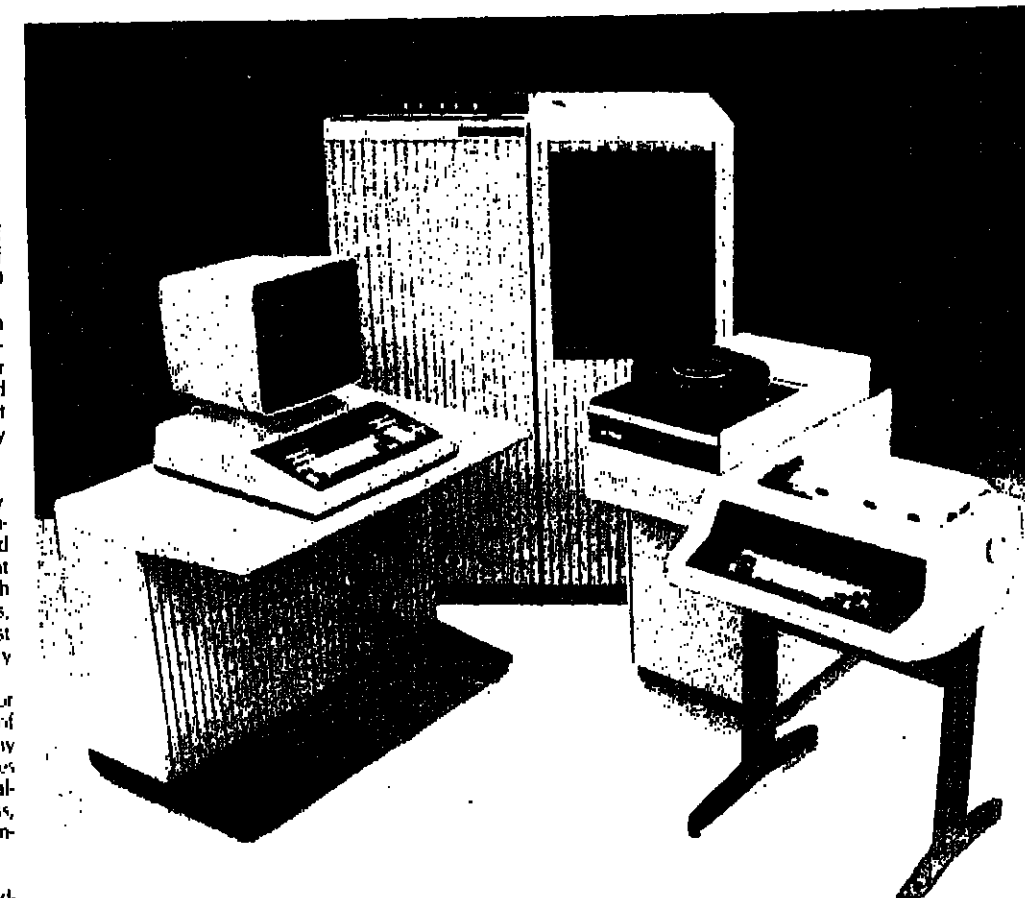
An important feature of the system is its ability to place stops on lending where, for example, a student nears the date of his leaving the Polytechnic or has persistently failed to return books on time over a period.

This feature is expected to reduce considerably the level of book losses to the library.

MAJOR BENEFITS

The real-time system comprises the Perkin-Elmer Model 6/16 with 64Kb of memory, 10Mb of disc and a tape drive. There are seven terminals, to read the bar codes on books and on borrowers' tickets, and two operator VDU's.

When fully operational, the system will confer major benefits, not only in respect of reduced book losses but also by making possible a much better service to borrowers, simplifying many administrative tasks and providing much useful statistical and other information required by the growing library.



Multi-user system for £20 K

Users of time sharing utilities and those who normally queue for access to a minicomputer, should look into new software releases from Perkin-Elmer.

A very low cost multi-user system can be acquired following the announcement of enhanced software for the Series 3200 minicomputers.

EDITING

Based on the OS/32 operating system, features include sign on, passwords and account numbers, command language, editing software, for interactive program development, scheduled job queues for background batch processing, and output spooling to a laser printer.

MEMORY ALLOCATION

Memory partitions are allocated at run time according to the number of users, the facilities required and the total amount of storage.

Compilers available include FORTRAN IV (Extended) and C/CAL 66. Also available is BASIC in the form of a run time interpreter and CAL, Perkin-Elmer's Assembler with an optional MACRO version.

Price for a typical hardware system is just over £20,000 and includes 128Kb of MOS memory, a matrix printer, 10Mb of disc and a floppy disc drive interface and one terminal.

Personal number cruncher

What sort of business, privately owned and employing only a handful of people, could afford to own a £40,000 computer? Manifestly, only one in which success would be directly attributable to its profitable use.

Such an unusual business is Wakefield and Imberg, a professional engineering design practice based in Stamford, Lincolnshire.

AUTOMATION

Specialising in the design and construction management of civil and mechanical engineering equipment, Wakefield and Imberg, whose Managing Director is a passionate believer in "small is beautiful", are determined to automate everything that can avoid increasing administrative staff and the kind of problems

that would turn him into an administrator.

MULTIPLE USES

The computer system is based on a Perkin-Elmer Model 8/16 mini-computer, coupled to a graphics display terminal, a 30-inch drum type automatic draughting machine and a printer. The computer has 64Kb of memory, 10Mb of disc and is programmed in FORTRAN.

Primarily intended for the development of structural analysis, equipment design, automated draughting and customer quotations, the system will also be used for project accounting and invoicing.

COMPETITIVE

Major benefits claimed for the system are, firstly, a truly dramatic

Signal Processing and Applications Group Cranfield Institute of Technology

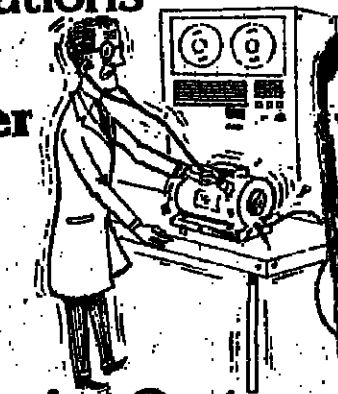
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MORE NEWS FROM THE NCC

With over 4,000 booths and nearly as many companies vying for attention, the NCC presented the biggest concentration of computer

equipment on show in the US this year. Here TIM PALMER and CHRIS HIPWELL report on more of the products on offer.

800 is twice as good says Harris

NEW from Harris at the NCC was the Series 800, featuring two models, the 850 and the 870.

The 800 offers between 1.8 and 2 times better performance than the S/500, introduced at the 1978 NCC, and this is achieved by use of a pipeline processor which can be prefetching and executing up to seven instructions simultaneously.

Not a true 48-bit processor, it nevertheless has a 48-bit data path throughout the machine; the register size is the standard 24 bits used on all Harris machines. It runs the same Vulcan operating system used throughout the Harris series, but features additional instructions over the S/100 line.

The 850 costs from \$280,000 to \$300,000, compared with

\$180,000 to \$200,000. Harris installed about twenty-five 800s in the first year of marketing.

Harris also showed its new 1670 communications system, which is built around an emulation of the Interdata mini Harris formerly used in the 1600 series, which is manufactured in-house.

Key features of the 1670 are concurrent RJE, local batch, data entry, local interactive, and 3270 or Uniscopy interactive processing with IBM or Univac hosts. Up to 16 IBM 3270 interactive terminals can run concurrently with up to 16 keystations, and Harris has completely rewritten the operating system for the new processor.

General Automation launched the SAFES Swift and

Foreign Exchange System package, developed in Europe, at the show, and got strong response from bankers.

Computer Automation has redesigned its Naked Mini 4/10 board computer so that it fits into a small, compact box for process control applications. The new version, which like the 4/10 is built around a 16-bit Computer Automation-designed LSI chip sets, is called the 4/04. The 4/04 is offered at under \$1,000 with 18K words of memory.

Underlining once again the free-for-all opened up in the minicomputer market by the bit-slice microprocessor, Ampex has been offering its own minicomputer for 12 months now.



The Kennedy Series 7000 was one of several Winchester-type fixed discs on display. This model can store up to 12 Mbytes.

Productivity boost claimed by Prime for Cobol generator

A COBOL program generator claimed to give a dramatic boost to productivity was demonstrated on the Prime stand by David Black and Associates of Pittsburgh.

Designed for use with any machine for which an interactive Ansi 74 Cobol development system is available, it is already being widely marketed by Prime; Data General is showing keen interest in adopting a version; and it is also running on DEC and Univac machines.

One claim for it is that a bill of materials processor consisting of 20,000 lines of Cobol was developed, debugged and tested in 10 days.

It is designed to produce efficient Cobol code through a question and answer sequence, and maintains a data dictionary of all files and their contents. It supports data entry, reporting and utilities, and is claimed to offer considerable aids to debugging and testing.

It is licensed for the particular machine the user intends to run it on, is marketed in the UK through Prime International, and costs \$25,000. Maintenance is \$2,000 a year, with two new releases annually.

Multi-host options on Paradyne's Pix II

MAJOR software extensions have been added to Paradyne's Pix II communications processor, enabling users to build multi-host networks around IBM mainframes, access different applications and software subsystems on the mainframe from a single terminal, all without touching or adding to the software on the IBM 370 or 303X host.

The enhanced version of Pix II is called Pixnet, and runs on the same standard processor already used by Paradyne as the local and remote control unit in a Pix II network.

Pixnet adds a key element to the standard Pix II repertoire of controllers, a network control unit. All three processors use the same hardware, a Paradyne emulation of the General Automation 16/220 microcomputer with some altered and some additional instructions.

The network control unit performs the functions of direction terminal messages to the right application on the mainframe, and of line concentration. A local control unit is still required at each mainframe, and at least one remote control unit at each terminal site.

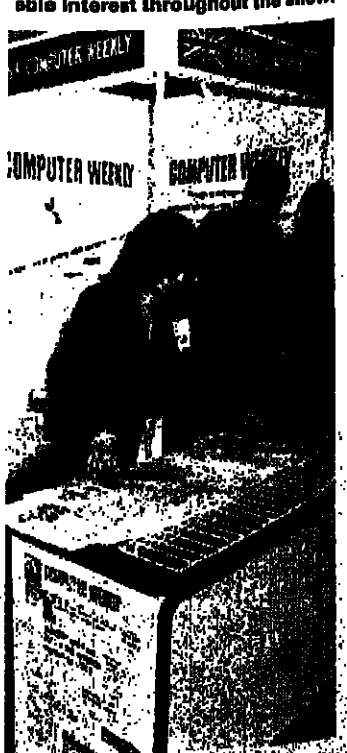
The network is initialised in the network control unit. On the mainframe, the required number of device addresses are made available to system programs like CICS and TSO under which applications to be remotely accessed are running. Requests

for these applications from the terminal sites are then directed to the host via the NCU, and the host accepts the messages as if they came from a local peripheral.

The network control unit nodes also handle routing of messages through the network, and data is carried in packets similar to IBM's SDLC frame.



AM International subsidiary, Jacquard Systems, gave demonstrations of its J100 small business system, which attracted considerable interest throughout the show.



Europe's most widely read computer newspaper, Computer Weekly, was a focal point of the exhibition, and attracted a large stream of visitors.

Tripling of disc traffic

A SEMICONDUCTOR memory unit which emulates the 1801 3380/3630 and 2305/2805 disc subsystems has been introduced by Intel.

Called the FAST 3805, the new unit is totally transparent to the CPU and, because access times are extremely fast, it is claimed that the 3805 can triple disc traffic without adding new channel or controller capacity.

The new unit incorporates an Intel 8086 microprocessor which manages the IBM 370/303X channel protocol and emulates the interface between the 370/303X channel and the 2835/2305 or 3630/3380 controllers/disc systems.

The micro also carries out double bit error correction and records the chip location of any errors.

Storage of the FAST 3805 ranges from 12 to 72 Mbytes and data can be transferred at speeds ranging from 1.5 to 4.0 Mbytes per second.

LETTERS TO THE EDITOR

Implications of word processing

YOUR report headed 'Con- voverly over benefits of WP (CW, June 7), includes two sentences which sum up the problem:

"Expensive machines were sitting unused in the corner of some offices... because there was not enough room for improvement in the areas of work they had been brought in to tackle."

"Some departments such as Social Security and the Army did, however, have good control procedures for WP."

Let's forget about electronic mail for the present. Word processing now is about the computerised typewriter. If you emphasise "typewriter" you could persuade your purchasing manager to spend seven or eight thousand on a fancy machine just to try it. Stick it in the typing pool and let them play around with it. But don't go crying to the supplier if you don't get the benefits you expected. A typist knows about typing. She doesn't know about control procedures, systems analysis, or unintended side effects.

If you emphasise "computerised" you will realise that you need to ask, "What is the effect of introducing computer disciplines into the least organised area of the office?" When you try to answer that question, you will realise that word processing will never succeed without thorough systems analysis and tight control. If you simply split the work in two and give some to conventional typists and the rest to WP, it makes as much sense as dividing your garden down the middle, tending one half with a spade and the rest with a bulldozer.

Before you even consider WP hardware you need to examine your typing workload closely. First, do your weeding. Don't have anything typed unless it is essential. When you have identified the essential typing, look at its message. Is it clear? An author may know his subject

but that won't automatically make him a good writer. Author training is the first essential of successful WP.

Identify areas for standard text. If you compose your standard text carefully, the emphasis of your author training will be on selection and combination of appropriate blocks. If you have standard descriptions of your products, for example, the author must know when and how to use each description. He won't need to struggle with his own attempt at a description each time.

Think about words on paper. Do you have standard layouts for letters, memos, reports? Does each author give his own instructions? Do you leave it all to the typist? Preliminary work here can save hours of trouble.

Think about paper. How many shapes and sizes do you use? On how many does the type have to line up with printed text or boxes? How accurate is your forms design? Consider seriously whether you can use continuous stationery. You'll save hours if you can, but remember you'll need to de-colate and guillotine — a pair of scissors won't do. Think about collection and delivery of work; streamline the entire paper-handling system.

When you've done all that, talk to a supplier. Get into the machine and compare its facilities with your requirements. Do the facilities suggest better ways of designing your system?

When you've designed the system to make best use of the new technology, write it up. Yes, that old bore documentation is essential. You are dealing with a computer.

Make sure authors and typists are fully trained and have adequate documentation, but be ready for amendments. A flexible system is essential to allow for the erratic demand for typing services. Remember a typist knows about typing — once she understands the machine her suggestions will be valuable.

The trouble is that WP software is so flexible, and some machines so cheap, that it's easy to get a machine and use it without thinking through the implications. WP suppliers tend to sell hardware and software products. Perhaps they could consider providing a systems consultancy service — or perhaps there should be more independent consultants.

Much of what I've said may sound obvious, but some of the comments about WP suggest that it's not obvious to everyone. Incidentally, I've managed a Wordplex 7 system on these principles for the last year or so. The work is a mix of standard letters, boilerplating and text editing. The average typing productivity increase is 100%.

PAUL HUDSON
Bradford, Yorkshire.

No joke at all for some

YOUR leader on June 7 did not dig deeply enough. The gross misconceptions about the nature of digital electronics which abound among laymen have as their root cause the nearly equally gross misconceptions about the nature of digital semiconductor electronics which pervade the computer industry. So long as we continue to allow so-called "Computer Science" courses staffed by programmers to take in students with no grounding in physics and then give them no training in hardware, paranoid ignorance will continue to pervade the computer industry and look out into the media and society at large.

IVOR CATT
St Albans.

An under-used qualification

FURTHER to George Penney's letter headed, 'Why programmers are in short supply' (Letters, May 24), colleges have for many years run courses for computer programmers. At my own college we run a full-time course based on the CGLI 747 (Computer Programming). This is a nine-month course (one academic year) and covers the educational requirements of the certificate, but allows us to improve the students' general education and provide some basic training.

The 747 syllabus is biased towards practical programming, but the theoretical aspect is not neglected.

Mainly our students are school leavers, many without academic qualifications (we have our own selection procedure). Students who display an aptitude for programming can develop their talents and have, on completion of the course, a

folder of written programs (albeit small, but nevertheless relevant) to enable employers to evaluate their potential. The less able (in this direction) secure employment as data control clerks, etc.

The staff feel we make a valuable contribution to the practical commercial field of programming and regret that this certificate is not more widely recognised.

The BEC/TEC committee has published details of its National Awards in Computer Studies and these are designed to enable the not too "academic" to embark upon a career in business programming.

If employers or students are interested in courses, they should contact their local college, who will be pleased to send them details.

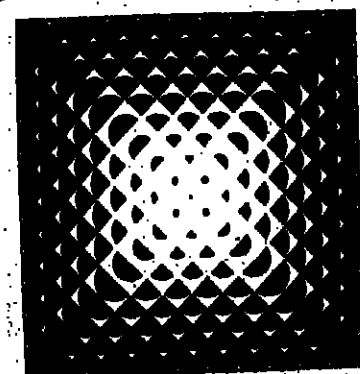
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The salary for the senior programmer will be on the scale £3,888-£9,452 p.a. which will increase to £7,237-£8,992 p.a. in October, 1979. The salary for the programmer will be on the scale £3,088-£6,108 p.a. or £4,333-£7,148 p.a. depending on experience. These scales will increase to £3,775-£6,355 p.a. and £4,333-£7,521 p.a. in October, 1979.

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The salary will be on the scale £3,888-£9,452 p.a. which will increase to £3,775-£6,355 p.a. in October, 1979.

LIAISON AND TRAINING

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OPERATIONS GROUP

COMPUTER MANAGER

Supervise the day-to-day running of the large batch systems. The person appointed will be responsible for the standards of operation, the production of records of equipment performance, and for stock control of consumable materials. An essential part of the job will be liaison with systems programmers and engineering maintenance staff, and supervision of operations staff through intermediate supervisors. Previous management experience at a large ICL or CDC installation would be an advantage. Ref: 132/79/CW

TECHNICAL SERVICES MANAGER

Be responsible for the supervision of the CYBER 72 laboratory system and the off-line facilities. The successful candidate will be expected to play a leading role in the installation and introduction of a microfilm/tape service. In addition, a large magnetic tape library and other off-line facilities will be under the control of the appointee. Previous management experience in these areas or technical qualifications and experience at a high level would be an advantage. Ref: 133/79/CW

The salary for both management posts will be on the scale £3,888-£9,452 p.a. which will increase to £7,237-£8,992 p.a. in October, 1979.

Benefits include a good pension scheme and generous holiday entitlement. If you would enjoy the challenge of working in a stimulating environment, with the prospect of a rewarding career, send for further information and an application form (returnable by 28 June, 1979) to the Registrar, University of Manchester, Oxford Road, Manchester M13 9PL, quoting the appropriate reference.

JBA

Prestel/Viewdata Specialists

Germany from £20,000
Immediate vacancies exist for consultants who have considerable experience of information transmission systems, such as Prestel, Viewdata, etc. Data-communications expertise and database knowledge is vital to the positions, particularly where concerned with large mainframes and front-end processors. A user contact background is desirable.
Our client is one of the largest consultancy organisations in the world with over 3,000 employees. On this solid foundation, the company offers real up-market remuneration packages and excellent relocation assistance. Further, the prospects of continuation of projects at very senior levels in a worldwide market place is virtually second to none.
Contact: Mike Creamer

Data Base Consultants

London based neg. to £12,000
Applications are invited from Senior Data Base Specialists with a wide computing and business background to join a leading consultancy. Candidates should have experience of special analysis and design methods appropriate to the data base approach, have worked with at least one of the proprietary systems and be able to compare the different types of solutions available. Appointees will be required to work on a variety of client projects, ranging from advising on feasibility through to the detailed design and implementation of specific applications. The ability to work in a sophisticated environment, coupled with the drive, personality and technical expertise to communicate on the same level as senior managers is of paramount importance.
Contact: Margaret Stevens

Systems Programmers

Munich DM 65,000 - 90,000 + benefits
Permanent positions are available with one of Germany's leading hardware manufacturers, for experienced IBM Systems Programmers who possess a minimum of 3 years experience.
DOS/VS, CICS, POWER/VS (or any other type of spooler) expertise is of most interest, although OS or MVS could also be of considerable value. All successful candidates will receive full relocation expenses, including agents fees, an initial family separation allowance and a minimum of 6 weeks holiday per year (plus all statutory holidays). German lessons will be provided.
Contact: Andy Wright

For further information on any of the above vacancies, please contact the appropriate consultant.
If your qualifications do not match the above positions but you are seeking other opportunities please contact us anyway.
JAMES BAKER ASSOCIATES, International Personnel Consultants,
16 Maddox Street, London W.1 Tel: 01-491 4478

Software Specialists

Home Counties up to £9,000 + bonus
A major software house, with an impressive growth record, is continuing to expand and currently has vacancies for Programmers and Designers to work on the development of middleware associated with established operating systems. Candidates should have at least 3 years experience working on software such as OS, DOS, VME-B/K, communications or networks. A background of implementing large mainframe systems, perhaps with a manufacturer would be an advantage.
Excellent salaries, relocation assistance and profit sharing scheme.
Contact: Jim Baker

Technical Analyst

Bracknell neg. £7,000 - £8,000
This is an outstanding opportunity to join a successful British Air Freight Forwarding Company, to help consolidate and expand the operation of its still relatively small d.p. function, both here and overseas. The company runs a worldwide network of minis, so although specific hardware experience is not required, candidates must have a thorough understanding of the concepts and possibilities of network processing. A sound knowledge of accounting/financial applications is, however, essential and must be combined with the ability to work at a detailed technical level.
Company benefits include an excellent pension scheme plus medical and life assurance - generous relocation expenses can also be made available. Two salary reviews per year can be expected.
Contact: Andy Wright

Programmers & Analysts

South of England up to £6,000 + mortgage subsidy + benefits
One of the most prestigious insurance services companies in the UK with an impressive 40% growth factor last year, are recruiting additional staff for development work. Many systems are under way including installation of a DMS 2 database and a large real-time terminal network. Completion of these projects opens the way for a considerable number of additional systems thus ensuring creative work for the future.
Programmers must have at least 18 months COBOL experience in a batch or real-time environment. Analysts should have real-time commercial or accounting applications experience. First class location, outstanding employment package and a realistic career growth. Call for more details.
Contact: Mike Creamer

Recruitment Consultants

Mayfair £10,000+ on target

We are a professional executive recruitment consultancy with a sound reputation and a proven record of success in several disciplines. We are seeking self-motivated entrepreneurial individuals with the potential to establish firm client bases and handle major advertising and selection campaigns. Thorough training will be given. Additional benefits include company car scheme, bonuses, etc.

Ideally in your mid-twenties to early thirties; you will be client/sales orientated and have achieved a level of success already in the Data Processing field. Experience of recruitment though preferable, is by no means essential. Strength of personality and the ability to negotiate at senior level will be important factors.

For more details contact Barry Latchford, Director on the number below.



**Lloyd Chapman
Associates**

125, New Bond Street, London W1Y 0HR 01-408 1670

Project Leader 'New Technology'

£8,000 + car

A small development unit is to be set up in the Southern Home Counties to plan and to put into operation computer-based methods of selling that will eventually serve a medium-sized printing and publishing group. A young project leader is needed to head this development; build up a team of about a dozen, select equipment, prepare and execute a technical development programme and implement pilot schemes. He/she should ideally be in 25-35 age bracket and have had some experience of print and of the new technology, but this need not have been in a line role—experience with a consultancy or with a manufacturer working in the field could well prove

sufficient. Computer Science graduates could be acceptable with relatively less practical experience, provided they have done enough to show that their ideas work. Salary and conditions are negotiable, but an initial remuneration of at least £8,000 + a car is anticipated. PA Personnel Services

Ref: TE96940ICW
Initial interviews are conducted by PA Consultants. No details are divulged to clients without prior permission. Please send brief career details or write for an application form, quoting the reference number on both your letter and envelope, and advise us if you have recently made any other applications to PA Personnel Services.

PA Personnel Services

Hyde Park House, 60a Knightsbridge, London SW1X 7LE. Tel: 01-235 6060 Telex: 27874



A member of PA International

D.P. MANAGER Crawley, Sussex £8,500 p.a.

The Unilock Group of Companies, leading European supplier of relocatable partitioning systems, is currently expanding its computer operations and intends to appoint a D.P. Manager to be directly responsible to the Computer Services Manager.

An ICL 2903 is already in operation and future planned developments include a major computer graphics installation. Applicants, in the age range 25/35, should have experience in systems analysis and design and preferably a knowledge of Fortran IV or RPG II. The successful candidate can look forward to total earnings in the region of £8,500 p.a., together with participation in pension and medical insurance scheme. If appropriate, relocation assistance will be provided.

Applicants should send C.V. giving personal and career history to:
John Devine, Computer Services Manager, The Unilock Group of Companies, Rutherford Way, Crawley, West Sussex RH10 2PD.

unilock

Programmers Managers in DP

Old Windsor

Are you desk-bound, unrecognised
and without prospects?

Then stand up and communicate
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Our Training Division is expanding to meet the ever changing needs of our customers and staff. We are looking for programmers with 1/3 years' experience of COBOL, and also for supervisors and managers in systems, programming or operations to join our lecturing staff in Windsor.

The benefits of this rewarding career are numerous:
• ICL is Europe's largest computer manufacturer
• Starting salaries between £4300 - £5300, or more from the DP management trainers
• Training given in communication and lecturing skills
• Teaching others, meeting new people and increasing your own experience
• Natural career paths through ICL's product range
• Travel opportunities in the UK and overseas.

For more information, please write to us quoting ref. CW141P or phone Windsor 04381 and speak to Michael Fisher ext. 2 or programming Elizabeth Sayers ext. 202 (DP management) or Michael Barnes ext. 201. ICL Training Department, Old Windsor Works, SL4 2JP.



**International
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ANALYST PROGRAMMERS/ PROJECT LEADERS £6500 to £7200+BONUS

Ladbroke Casinos are acknowledged as the leading company in what is a young, dynamic and very exciting industry. With four Casinos in London, soon to include the Ladbroke Hyde Park Casino, probably the most luxurious in Europe, and eight in the provinces plus an ambitious expansion programme, the Company is reviewing its total data processing strategy. Based on powerful minis we are about to start the design and implementation of a completely new on-line management information and control system.

Our hardware investment may well exceed six figures and equipment selection is now in hand. Plans include Batch, interactive, real time, communications and distributed processing, covering routine accounting such as payroll through to signature recognition, COM, marketing and financial modelling. The Company offers a wide range of benefits from Lunchon Vouchers through to Holiday discounts. If you have relevant experience to offer, preferably in a high level language and are prepared to make a significant contribution to our development effort right at the beginning of this exciting project, we can promise you a quick interview and genuine interest in your future career development.

Contact: Neil Lester,
Ladbroke Casinos, 01-499 8321 day, 01-952 1421 evening.



This progressive Company, manufacturing electric road vehicles and industrial trucks, urgently requires an experienced

SYSTEMS MANAGER

To manage and develop systems on an on-line mini-computer installation in South Wales.

Salary offered c. £8,200.

Apply in writing to:

Mr. H. H. Clarke, Director
at the below address, or if preferred an informal out of hours meeting can be arranged to discuss this opportunity by telephoning the number below.

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Freelancing but done
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(office hours)
or (0565) 3122

MANCHESTER RPG II PROGRAMMERS
to £4,800
Our client requires a young RPG II programmer, preferably with some COBOL, and 2 years 2900 experience. Good prospects with growing company.

NORTH CHESHIRE SENIOR PROGRAMMERS
to £7,000
Senior programmers with sound IBM or Honeywell experience are required by a leading UK consultancy. Must be self-motivated. Wide range of applications available.

OLDHAM SYSTEMS ANALYSTS
to £5,100
Analysts with up to 2 years financial or production control experience are sought by our client. Opportunity for progression and to see systems through.

STOCKPORT SYSTEMS ANALYST, PROGRAMMERS
to c. £6,000
In order to meet expansion our client is seeking a range of DP staff with a variety of experience.

PROGRAMMERS SHOULD HAVE GOOD COBOL or IBM/ICL ASSEMBLER BACKGROUNDS. Analysts are required with sound commercial experience. Salary and prospects excellent.

MERSEYSIDE ANALYST/PROGRAMMERS
£5,500
Client with large IBM installation is seeking Analyst/Programmers with a good COBOL and commercial/manufacturing background. Opportunity to work on advanced systems, and to receive the best training.

BOLTON COBOL PROGRAMMER
c. £5,000 + BENEFITS
COBOL programmers with 2 years + experience are required for development and maintenance of both batch and on-line applications. Go-ahead IBM installation.

MANCHESTER SYSTEMS ANALYST
to £6,000
Our client operates a large IBM installation under DOS/VS/CICS and is seeking Analysts with 2 or more years experience. Some programming experience preferred but not essential.

LIVERPOOL SENIOR SYSTEMS ANALYSTS
to £8,250
Analysts with 3 years + experience on commercial systems are required by our client who is shortly to update to 2900 hardware. Good salaries and prospects.

WARRINGTON COBOL PROGRAMMER
£4,300
Our client requires a young COBOL programmer with over 8 months experience. Good benefits and guaranteed reviews.

CHESTER COBOL PROGRAMMERS
c. £5,500
Young, well educated COBOL programmers with over 2 years experience on any hardware are required by our major client. Opportunity for development work on a number of applications.

LIVERPOOL PROJECT LEADERS
to £8,000
Project leaders with an in-depth experience are required by our client. Major developments in a large and advanced installation.

LIVERPOOL SENIOR SYSTEMS ANALYST
c. £7,000
Our client is seeking Senior Analysts with a wide commercial background. Excellent prospects and benefits with this major company.

WALK-IN TO DISCUSS YOUR NEW JOB IN- LANCASHIRE & CHESHIRE AT THE FOLLOWING HOTELS

MONDAY 25th JUNE

STOCKPORT

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Dialstone Lane Tel: 061-483-3851

TUESDAY 26th JUNE

MANCHESTER

Portland Hotel 3/5 Portland Street

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WEDNESDAY 27th JUNE

LIVERPOOL

Centre Hotel

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THURSDAY 28th JUNE

CHESTER

Mollington Banastre Hotel

Parkgate Road Tel: 0244-851471

LORIEN COMPUTER SERVICES Recruitment Consultants

OCS House,
Servia Road, Leeds LS7 1NJ
Telephone 0532 444185
* (24hour Ansaphone service)



Holland, Germany, Ireland, Belgium, Switzerland and the U.K.

We have a first-class selection of permanent/contract opportunities throughout Europe.

Based in convenient locations throughout the above countries are a choice group of Blue Chip Companies offering excellent salaries and relocation +.

Individuals with good expertise in any of the following areas should apply immediately

- REAL-TIME COMPUTER SYSTEMS
- COMPUTER COMMUNICATIONS
- SCIENTIFIC/TECHNICAL
- COMMERCIAL BUSINESS SYSTEMS
- BASIC SOFTWARE DEVELOPMENT

For further details concerning these appointments please contact Eddie Howard

COBOL 18 months +

£ to 8,000.

HOME COUNTRIES

Our Client has been making headlines again with the successful launch of their new series 32 Bit Mini. As a leading computer manufacturer they are always seeking new talent and in this instance they require someone with good knowledge of a JCL or time sharing. It is important that candidates are self motivated and well presented as client contact is inevitable.

For further details please contact CW239.

REAL-TIME PROGRAMMERS

UK & OVERSEAS • **£ DEPENDENT ON LOCATION**
Take advantage of our position as one of the leading recruitment specialists in the field of scientific programming. Today, more than ever, there is a demand for highly skilled personnel with the ability to tackle wide ranging projects in the design and development of scientific computer systems. If you hold a degree in a scientific discipline or have relevant practical experience of real-time mini computer systems, using either ASSEMBLER, BASIC+, MACRO 11, CORAL or FORTRAN, then give us a ring quoting ref. CW240.

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Computer Personnel Consultants

01-399 9183

NEW IBM 4300 Plus NEW IBM 370 Equals NEW OPPORTUNITIES IN SLOUGH Basic salaries from £6000-£9000

COBOL programmers*
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Senior operators (non shift)*
DOS, CICS, DL/1*

FREE CAMERA

Cut this out and take it with you to your interview

Whether you join the company or not, we will exchange it for a brand new electronic Auto exposure Voigtlander V110 EL camera plus electronic flash. No strings. Just perfect pictures and a chance to learn more about these fine opportunities.

Career prospects are excellent and new VDU based systems mean plenty of job interest whatever your specialisation.

These openings are at all levels and all carry very good salaries. For example a COBOL programmer with sound DOS, CICS and DL/1 experience and capable of leading a small team could command £9000 p.a.

A senior operator working single shifts would start negotiating from £6000 p.a. If you are really good and know IBM inside out our client will pay what it takes to attract you.

We are also seeking a good systems programmer prepared to assist with commercial applications. Again, you can virtually name your price if you have solid DOS, CICS and DL/1 experience.

Whatever your skills and level of experience you should talk to us about the range of opportunities available.

The company is an internationally known name in quality consumer durables and offers secure employment, above average salaries and excellent working conditions.

To find out more, please call Laura Elliott or write to her at:

Castle Computer Services Limited
271 High Street, Berkhamsted, Herts. HP4 1BW. Phone: (04427) 73151

SOFTWARE DESIGNERS

Do you have two to three years' experience designing systems with microprocessors or minicomputers? If so, there is an opening for you in our active, expanding Research & Development Department.

We currently have vacancies for two Software Designers to work on microprocessor-based designs and take responsibility for their software development.

The Department is active in a variety of fields including Research, Electronics, Computing and Precision Engineering, giving the successful applicants the opportunity to display their skills solving a wide variety of problems.

Applicants should have a suitable degree or other equivalent qualification, and have worked with at least two of the following systems: PDP11/LSI11, RT11, RSX11, IAS, M6800, Z80/8080. An understanding of computer hardware would be a distinct advantage.

The Department is currently based in London EC1 but will be able to offer the opportunity to work to the west of London in the near future. An excellent benefits package is offered, including a non-contributory pension scheme, free life assurance, free staff restaurant, and relocation assistance.

The appointments would be financially attractive to those currently earning around 6.5K.

Please write to: **M. H. Boorman, 2 Charterhouse Street, London EC1**, for an application form, giving a brief description of your career, and a telephone number where you can be contacted.

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better.

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find a new life and a
new lifestyle.
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on 01-680 1955.

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Sampson Staff

The University of Manchester
Institute of
Science and Technology

UMIST CHAIR IN SOFTWARE ENGINEERING OR IN APPLIED MICROELECTRONICS

Applications are invited for a new Chair to be created either in the Department of Computation (Software Engineering) or in the Department of Electrical Engineering and Electronics (Applied Microelectronics) to strengthen the established position of UMIST in the application of computers and programmable microelectronic components.

Applicants should have made significant contributions in areas such as:

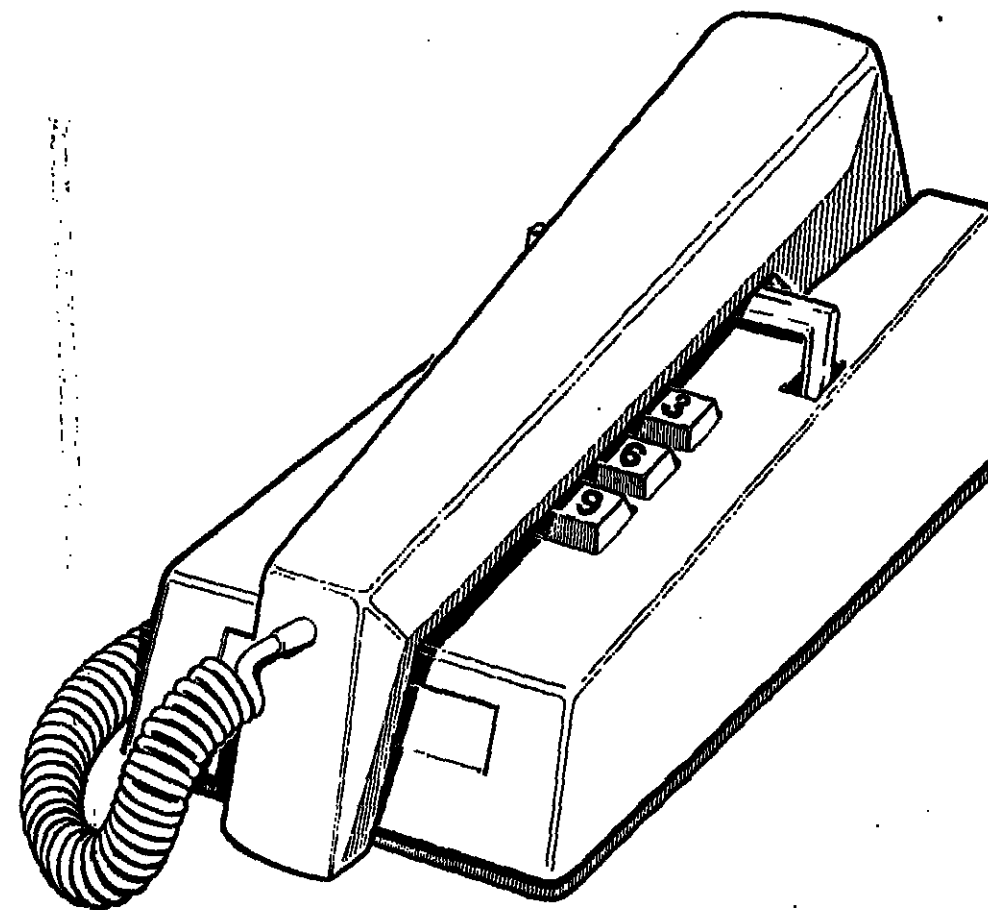
- The Application of microprocessors in Electronic Engineering or Data Processing
- System Development Environments
- Computer Assisted Design or Testing of Digital Systems or Microelectronic Components
- Distributed Computing
- Programming Languages
- Interpretive Machines
- Formal Design Methodology
- System Reliability
- Robotics
- Computer Theory
- Data Networks

Both Departments have extensive facilities to support research and teaching of established B.Sc. and M.Sc. courses and are jointly developing a new M.Sc. course "Microprocessor Engineering & Digital Electronics". The Microprocessor Engineering Unit within the Department of Electrical Engineering and Electronics houses several microprocessor development systems and other support facilities including the CYBA-M multi-microprocessor system. The Department of Computation contains several facilities including a PDP 11/34 which supports UNIX, MicroAda, and MicroCobol and the development environment for CYBA-M, plus a teaching laboratory based upon six separate PDP 11/03 systems. Batch and Interactive Computing facilities are provided on the 1906A/7600 and CYBER 72 systems of UMCC. In addition there is the DEC PDP 11 system connected to the SRC ICF network.

Each department has links to the UMIST Microelectronics Applications Unit which has been established to provide a mechanism for technology transfer to industry based upon a consultancy service, prototype development and courses for the retraining of industrial personnel.

Applicants should be received as soon as possible after the appearance of this advertisement. Salary will be in the Professional range with a minimum of £10,998 from 1st October, 1979, with a further cost of living increase to be negotiated to operate also from 1st October, 1979.

Further particulars and application forms may be obtained from the Registrar, UMIST, P.O. Box 88, Manchester M60 1QD, by quoting reference EEE/108/BC. Enquiries may be made to the Registrar, or to Professor D. Aspinall in the Department of Computation or Professor H. C. A. Harkins in the Department of Electrical Engineering and Electronics.



MICRO-PROCESSING FOR TOMORROWS WORLD IS WITH ITT TODAY

SOFTWARE SUPPORT PROGRAMMERS

THE COMPANY

ITT the International Telephone and Telegraph corporation was founded in 1920 and is now one of the world's largest businesses. ITT is a diversified, multi-product company with manufacturing and/or sales activities in 86 countries.

To maintain its current leadership in many areas of telecommunications, electronics, and other fields ITT needs specialised units with the capability to meet the rapidly changing demands of the telecommunications market thus IDEC - The International Data Engineering Centre.

THE LOCATION

These appointments are based in modern offices at Potters Bar which is in the middle of delightful Hertfordshire countryside. It is easily commutable from London and surrounding areas.

THE VACANCIES

IDEC are looking for people to join their expanding team of professional programmers, which is currently developing software aids for testing multiprocessor systems using the INTEL 8080, 8085 and the new 8086 microprocessors. The software is then simulated on an IBM 370/158.

THE REQUIREMENTS

They would like to talk to you, if you have two years programming experience gained in a mini or micro environment, and are interested in developing future technology. As the Software is developed on an IBM machine, your knowledge of any high level language coupled with the desire to move into the technical field could be of interest. This experience need not necessarily have been gained in an IBM installation, although it would be useful.

THE FUTURE

Horizons are only limited by imagination. ITT has a record of past innovation and achievement; present investment in research and development will help fashion the shape of things to come.

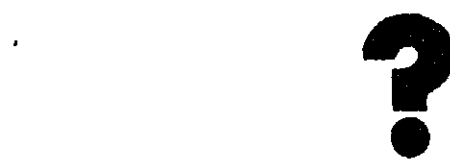
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A Development Centre for
ITT Business Systems

The future begins now, so why not pick up the phone and call Basil Pearce on 01-439 7871 for further details. If this is not convenient why not cut out the phone and post it.

Ref: BP 25/1

PLEASE SEND ME FURTHER
DETAILS ABOUT THE FUTURE WITH
ITT

Name _____
Address _____
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Our client, part of an International Pharmaceutical Group, is engaged in the research, development, manufacturing and marketing of a wide range of ethical and allied products.

The delivery of an IBM 4341 is fixed for October next year to replace their existing IBM 370/125. Major developments are underway currently in production planning and control systems utilising DL1 and CICS. A committed programme of development will commence early next year with fully integrated DB/DC facilities. Their current EDP team of 37 staff is planned to expand accordingly.

They currently require programmers or analyst programmers with good COBOL programming experience. Machine experience is unimportant. Training will be given in IBM assembler and CICS/DL1.

This is a super company, offering free lunches (comparable to most West End restaurants) and mid-morning snacks, an excellent 6 months sick pay scheme together with long term incapacity benefits. Free BUPA and personal accident schemes with a contributory pension scheme. Salary negotiable up to £8,500 with a review before the end of the year.

There is plenty of parking space and the Company is 5-10 mins walk from Piccadilly and Central Line Stations.

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143/4 ROYAL EXCHANGE BUILDINGS

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IBM 370 OS ASSEMBLER TSO PROGRAMMERS

Required for our Northern client.

c£230

UNIVAC 1108 PROGRAMMERS

Required by our Northwest and Midlands clients. Varied applications, general, commercial financial. Contracts 3-6 months+.

c£220+

PDP11 RSX11M CORAL 66 PROGRAMMER/DESIGNERS

Required for our Northern client. Interesting long term contracts.

c£NEG

IBM 370 COBOL/CICS

For our Midlands client.

c£230

DATABASE ADMINISTRATOR

with IDMS expertise required by our Midlands client.

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Required by our Midlands client. Various commercial applications.

c£220

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Required to work in the North East. Contract of 3-6 months in duration.

c£NEG

LARGE 2900's S.3 PROGRAMMERS

Interesting contracts Northern location.

c£NEG

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Required for Northern client.

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CICS/PL1/DOC/VS/PROGRAMMERS

Required by our Midlands clients. Various applications.

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Required for Scotland and the North East.

c£220

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required Midlands.

c£220+

PDPII RSX11M MACRO II ASSEMBLER SYSTEMS DESIGNER

for our Midlands client.

c£300

For details of these and other contracts please contact Judy Lees/Lynn Barton on 061-833 8341/6 (24 HRS.)

CURRENT VACANCIES INCLUDE:

PROGRAMMERS IRELAND

to £8500

Our client require programmers with PDP BASIC or DIBOL experiences to work in installations in Southern Ireland. Relocation expenses. Ref. 1158.

PROGRAMMERS NORTH

to £5712

Programmers with COBOL experience are required to work on large 2900's. Productivity payment/relocation expenses. Ref. 1071.

PROGRAMMERS NORTH WEST

c£5300

Subsidised mortgage scheme offer: COBOL or ASSEMBLER programmers required to work on advanced IBM equipment. Ref. 1139.

ANALYST PROGRAMMER LANCS

Our client require Analyst Programmers ideally with IBM/COBOL experience to work in an expanding installation. Excellent career prospects. Ref. 1065.

ANALYST PROGRAMMERS THE NORTH

£5600

Analyst Programmer with ICL COBOL experience and driving licences are required to service a group of companies in the North. Ref. 1156.

ANALYST PROGRAMMERS WEST YOKS

c£5400

Our client require a working knowledge of design and analysis or a desire to get into systems. COBOL experience required. Ref. 1113.

SYSTEMS ENGINEERS CLEVELAND

to £7650

Our client require Systems Engineers with experience in process control. DEC knowledge an advantage. Ref. 1161.

SYSTEMS ANALYSTS NORTH

c£6200

Productivity payment and relocation expenses offered. Our client requires Analysts to work on large ICL 2900's. Ref. 1073.

SYSTEMS ANALYSTS LANCS

to £7000

Our client a leading expanding installation require Analysts to work on IBM equipment. Relocation expenses offered. Ref. 1166.

SYSTEMS & PROGRAMMING MANAGER MIDLANDS

c£7000

Our client is in need of a Systems and Programming Manager to work in their ICL installation. Commercial environment/relocation expenses. Ref. 1169.

ANALYST PROGRAMMERS THE NORTH

to £5600

Analyst Programmers or Programmers with an interest in systems required. ICL PLAN experience ideal. Ref. 1166.

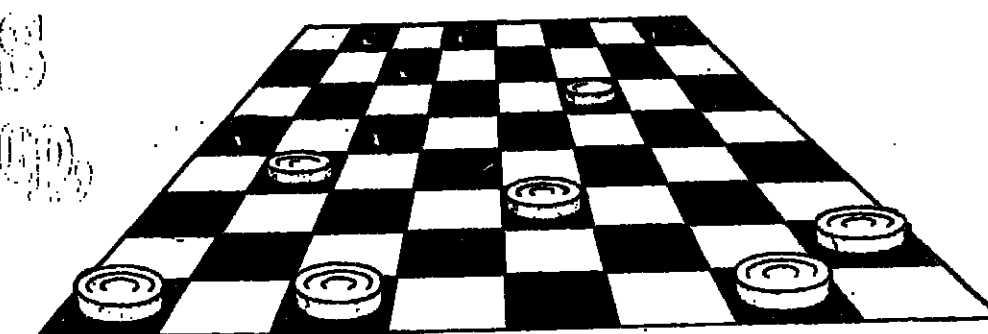
SYSTEMS PROGRAMMER LIVERPOOL

to £6000

Good working knowledge of operating systems and high level languages required. DEC experience an advantage. Ref. 1163.

CONTACT: JOAN JOHNSTONE
061 833 8341 (24 HRS.)

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Herts EN8 9SL
Telephone: 0438 32222



Your move to Cheshunt and Tesco could be the turning point of your career. For you'll be establishing yourself in the forefront of program development. And there's no more exciting or vital place to be today.

Tesco have got the hardware, the IBM 3032 and all the latest peripherals, and they are making it work in a way that management can understand and use.

You have spent some time in the industry, gaining experience on a variety of commercial projects, and you're ready to

start moving up. You can with Tesco. To start with, you'll be working in a small specialist team. But the department is growing - just like Tesco itself - and opportunities for advancement will be frequent as your skills increase and you feel the need for greater responsibility.

We're looking for programmers at all levels of seniority: show us that your experience justifies it and we'll pay you a **SALARY OF UP TO £7,000 pa.** You will enjoy a subsidised restaurant, Country Club membership, a contributory pension scheme and, where

applicable, re-location expenses to the pleasant environment of Cheshunt and the Lea Valley.

For more information and an application form, contact: Fred Rayers, Computer Services Manager, Tesco Stores Ltd., Tesco House, Delamare Road, Cheshunt, Herts EN8 9SL. Telephone: Waltham Cross 32222. Ext. 3398.

COMPUTER PROFESSIONALS

LOCATIONS SOUTH EAST ENGLAND

Are you a Computer Professional looking for a rewarding career in sales?

Our Client is an international Computer Manufacturer offering a structured career path for trainee and experienced Sales Executives.

The successful applicants will be working with advanced equipment that enjoys an excellent world-wide reputation.

To give you a recipe for success, our Client will provide:

- ★ Exciting highly competitive products
- ★ Full technical support facilities
- ★ Continuing sales, product and management training
- ★ Realistic and achievable quotas

Here is a rare opportunity to become part of our Client's exciting future and join a professional sales team where you will enjoy the substantial rewards of one of the world's top manufacturers. Ideally, candidates should possess:

SALES EXECUTIVES

- ★ A confident sales personality to accompany a successful track record in selling mini and mainframe computers.
- ★ The qualities and attributes to work in close contact with existing Clients and the ability to identify new prospects.

A Company car, full expenses, plus other big Company benefits apply. So do not miss this chance for an immediate and confidential interview. **CONTACT Simon Lever on 01-935 0671 (24 hour answering service) or 0562 884166 (evenings and weekends).**

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- ★ A real wish to sell in a professional environment.
- ★ A broad knowledge of commercial and business systems.
- ★ Good commercial skills both oral and written.
- ★ The personal drive and self-motivation necessary to succeed in a sales role.

London 01-935 0671 3 Mandeville Place, Wigmore Street, London W1M 5LB
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Manchester 061-833 0427 Blackfriars House, The Personage, Manchester M3 2JA

Specialist Computer Recruitment Ltd

Technical Consultant (Circa £9000+company car)

We are Tesco Management Services Limited, a newly formed Computer Services company, a wholly owned subsidiary of Tesco Stores Limited.

We require a highly skilled computer professional who will directly contribute to the success of this ambitious young company. Applicants should be men or women with considerable experience of at least one IBM Operating System, and a good knowledge of Assembler and COBOL. People who, as consultants, will provide marketing support and also develop software aids for use on customers' premises.

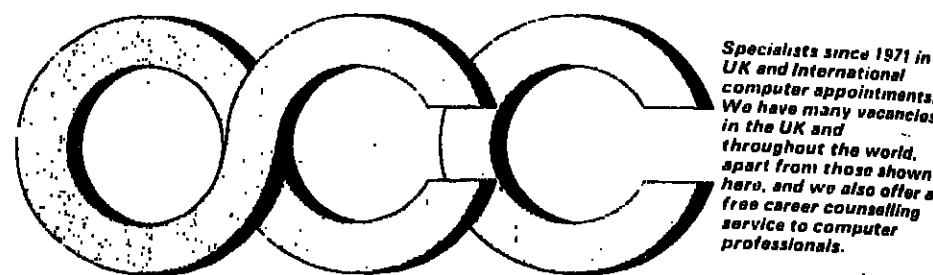
We are looking for a high degree of professionalism plus good communicative skills, and a maturity that comes of experience rather than age. You will have demonstrated that you can cope in a variety of different environments and must have an awareness of the skills required to manage and motivate people.

You must be ambitious, and be prepared to work as part of a small but highly-

motivated team and be prepared to work away from home as required.

There is likely to be considerable U.K. travel and therefore you will need a current driving licence.

Benefits will include a contributory pension scheme, subsidised restaurant, and re-location expenses where applicable. For more information and an application form, contact: Fred Rayers, Tesco Management Services Ltd., New Tesco House, Delamare Road, Cheshunt, Herts. EN8 9SL. Telephone: Waltham Cross 32222 Ext. 3398.



Specialists since 1971 in UK and international computer appointments. We have many vacancies in the UK and throughout the world, apart from those shown here, and we also offer a free career counselling service to computer professionals.

Hotel Systems London & Overseas

Project Managers to £10,000 p.a.
Team Leaders to £8,500 p.a.
Senior Programmers to £7,000 p.a.

A major UK Software House is rapidly expanding its hotel systems division. There are opportunities for senior staff at their Product Development Centre in West London and for implementation staff for projects in UK, Europe, North America, Far East and Australia. The typical duration of an overseas assignment is six months plus consultancy and sales visits.

Candidates will have extensive experience of mini-computer projects on commercial applications, especially reservation, accounting, point of sale and communication links to specialist terminals.

Project Managers should be able to take technical and financial responsibility and to deal with the top levels of User Management.

In addition to the salary quoted above, the remuneration package includes good travelling expenses and the possibility of a productivity related bonus. Ref: 168/CW/FS.

Informal Interviews: Our clients will be at our premises on Monday, 25th, and Tuesday, 26th June, 5.30 to 7.30.

To apply for any of the above positions contact Fran Setter or Sarah Hurn on 01-242 9356 (daytime); 01-673 0205 (evenings/weekends)

OCC Computer Personnel Limited
18 Bedford Row
London, WC1R 4EB
Telephone: 01-242 9356

Members of
Computing
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PROGRAMMERS/SYSTEMS ANALYST

Join Data General's new
Software Applications Group

Data General is already firmly established as one of the world's foremost computer companies. Now, as part of our continuing programme to broaden the service to our clients, we are setting up a new Software Applications Group to be based at Hounslow.

We need two experienced programmers and one systems analyst, who will provide the springboard for the further development of the new group... so career prospects will be excellent. Ideally you should have telecommunication or commercial experience on minis, preferably in COBOL or Assembler.

Systems Analyst

You will receive a salary around £8-9,000 (depending on your experience) plus a company car. Demonstrated ability and personal growth could lead to a Project Leader's position in one to two years.

Programmers

You will receive a salary around £6-7,000. Unusually good opportunities for promotion to System Analyst are available within the Data General organisation. This is an excellent 'ground floor' situation with potential for advancement in the next year or two.

Phone or write to Clive Wright at the address below.

Data General

Data General Limited, 3rd & 4th Floor, Hounslow House, 724/734 London Road, Hounslow, Middlesex TW3 1PD. Tel: 01-572 7455.

Graduate plus two years?

If you have two years' computing experience now is the time to acquire some microprocessor expertise.

At Marconi Avionics we provide training in design techniques and CORAL. At plants in Borehamwood, Welwyn Garden City and Radlett, all in Hertfordshire, we are writing software for TEXAS, MOTOROLA and INTERSIL microprocessors and we need programmers and engineers for several small projects.

So if you are a graduate with two years' programming

or hardware experience and are interested in working with microprocessors please ring Chris Hill on 01-953 2030 ext. 3449. Alternatively write to him at Marconi Avionics Limited, Elstree Way, Borehamwood, Hertfordshire. Please quote reference MA79105. These posts are open to both men and women.

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All classified copy should reach our offices no later than 5.30 p.m. on the Monday preceding Thursday's publication. If complete artwork is supplied 12 noon on a Tuesday.

Ring David Abbey for further details on 01-261 8010.

ab improve your career!

Our career planning advice HAS to be right — it comes from our top applicants and the people who hire them! It also comes from the people who we can't help — the ones that got it wrong. When we pick our jobs, we look for the training, the exposure, the rewards and the options that YOU are going to need as your career progresses. The following jobs are all 'CAREER BUILDERS.'

TRAINEE APPLICATIONS CONSULTANT

Richmond Start £5000-£5500
This UK services company (American parents) has a well-established, highly profitable operation based in Richmond and prefers to groom its own consultants. The 3-phase training program extends over 2 years, including formal courses and practical experience in applications, languages, packages, database systems, communications and personal skills. After initial training you will work on your own projects, with your own customer base, earning bonuses geared to your own, and the company's performance. As you progress you will receive a car allowance — or a company leased car if you prefer — and promotion to consultant status after 2 years.

For keen young professionals who have made a start in commercial programming or systems, this is one of the finest apprenticeships in the industry. Ref. CA 765

SYSTEMS CONSULTANT

Wembley Min. £7,500 + car
Small Systems Manufacturer (stand-alone and distributed applications) offers two customer support roles — mainly analysis but some programming. Interesting projects — reservations, warehouse, POS, etc. Ref. CA 710

MICRO FIELD ENGINEER

280, 8080, 890 in U.K. and Europe

Home Counties North Package c.£6,000 + car
Newly established systems company (subsidiary of very successful software house) is offering exciting opportunities to ambitious engineers. All the leading microprocessors are featured in the wide range of standard and custom designed computer systems built and marketed by this compact, dynamic company, based North of London. If you are seeking to gain experience on the above micros, enjoy travel and meeting people — have good electronics/computer background then call today — but hurry! Ref. EK 2174

COMMISSIONING ENGINEERS

North London c£5,000 start
New division of important computer systems house have opportunity for a young, ambitious test/commissioning engineer to help build up the operation. You will gain experience on a wide variety of micro-based computer products in a role that leads to technical consultant or customer support. If you have an electronics background, this is a chance to apply and develop it in a really stimulating environment. Ref. EK 2175

SMALL IBM SYSTEMS

Kingston £4 1/2 - £8k + car + bonus
A successful systems house with a queue of new customers is eager to meet you if you have RPG 2 or BASIC with commercial applications experience. Bonus scheme, generous expenses, salary review twice yearly. From programmer to Project Leader you will enjoy working with this lively young team. Right by the station, own car park + local pub with the best food in Kingston. Phone us quickly for this one! Ref. CC307

If you have two years' good experience, on small machines, they are willing to teach you RPG2.

SYSTEMS ANALYST

Morden £7,500 + car scheme
Be second-in-command to one of the best managers we know. Are you a Systems Analyst, articulate and experienced, perhaps with a programming background? (TOTAL database experience would be a definite 'plus'). You will develop a new on-line accounting and enquiry suite for this progressive retail company. Interest-free car loan, good holidays, huge discounts on goods for your home (beat the VAT increases!). Short trips to the Cotswolds: Floxtime. A really terrific career opportunity. Ref. CC 325

SALES EXECUTIVES

£17,000 + Car
Our clients, one of the New Leaders in the minicomputer field, who during 1978: Broke the \$100M barrier Doubled their turnover Doubled their customer base Built 2 major facilities —are offering exciting opportunities in the South to ambitious Sales Executives.

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Basic Salary c£7,000
Earnings Guarantee
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Unrivalled management opportunities
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The Company

A consultancy whose totally professional approach has earned them one of the highest reputations in the computer services industry.

Base salary £6½k Earnings £15k

Commission paid monthly
Guarantee period
No upper earnings limit
Company car scheme

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Person

A gregarious personality with a good current knowledge of the computer industry, organisation structures and applications, plus a background in systems, programming, consultancy or management.

Contact Faye Ogilvie
or Tony McGrath

Position

Reporting to the Marketing Manager, you will be responsible for account sales, developing existing clients and further expanding the already broad base of business. This involves travel to client sites so mobility is essential.

John J. 1.30

£10k+Appointments £10k+Appointments £10k+Appointments

MYRIAD

INTERNATIONAL PRODUCT CONSULTANTS

FINANCE
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BASED S.W. LONDON
WORLD-WIDE TRAVEL

TOTAL CIRCA £14,000
PLUS EXPENSES

Four outstanding persons are required to form a new department within a leading, multi-national organisation based in S.W. London. Operating as an integral unit, the persons appointed will be responsible for implementing a five year strategic and operational plan for the development and expansion of major computing facilities in the four business areas specified above. Each Consultant will specialise in one of these areas to establish and advise marketing/sales teams throughout the world, ensuring efficient policies are being pursued. They will possess a comprehensive knowledge of potential applications areas in order to identify and exploit future markets to which modern computer technology can most effectively be applied.

Candidates should offer

- * IN-DEPTH EXPERIENCE OF ONE BUSINESS AREA
- * ENTHUSIASM, CONFIDENCE AND MATURITY
- * COMPUTER SYSTEMS BACKGROUND
- * THE ABILITY TO COMMUNICATE EFFECTIVELY WITH SENIOR MANAGEMENT

The Company is able to offer exciting career opportunities in a very rewarding environment, coupled with the security of a major U.K. organisation. Salaries are negotiable and will not be a problem for applicants with the required skills.

REF: S2/2106

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Have you 3-5 years' IBM or IBM compatible hardware experience, plus a desire to live abroad? We are presently seeking a number of engineers with your experience and background to live and work in Austria. Internationally the company is well established and prosperous, geographically the company is new, which will allow enormous career potential. The salary? Circa £15,000 p.a. plus car and relocation and all other benefits normally associated with this type of appointment.

In the first instance telephone quoting Ref JMC/12.

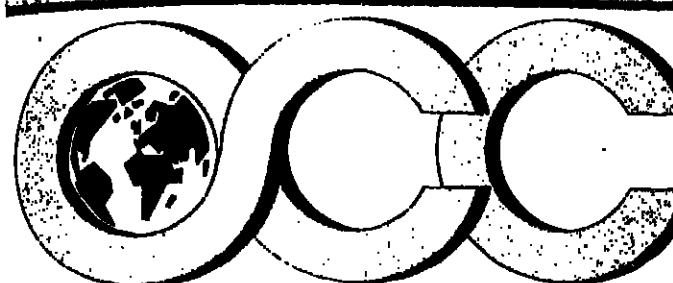
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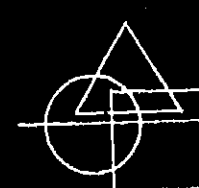
Our client is one of the oldest established organisations marketing office equipment through ten branches in different locations in Saudi Arabia. They are the exclusive distributors of WANG hardware including minis, multi-programming, multi-language and visual storage facilities and word processing systems. They are also involved in tendering to the government for software projects on other hardware.

- The Branch Managers should be 30-40 years old with a minimum of five years' experience selling total software and hardware solutions. The position will require supervising staff in customer support, servicing and programming areas.
- The Sales Representatives should be over 26 years and have three years' selling experience of both hardware and software with a good knowledge of competitive equipment.

Free accommodation plus an excellent benefit package is available.

To apply please contact Fran Setter or Sarah Hurn on 01-242 9356 (days) or 01-673 0205 (evenings). Interviews will be held in our London offices at 16 Bedford Row, London WC1R 4EB.

OCC Computer Personnel Limited
16 Bedford Row
London, WC1R 4EB
Telephone: 01-242 9358



PARAMIN, LTD.

SYSTEMS PROFESSIONALS NEGOTIABLE TO C. £11,000

PARAMIN is a systems house, already successfully established in the U.S.A. and Belgium. These offices have been in existence since 1974.

PARAMIN specialises in technically challenging projects, primarily in the mini-computer and microprocessor fields. We are concerned with such areas as telemetry systems, signal processing, systems and micro-page-switches.

PARAMIN is now setting up a new U.K. company in the South-East. The plans are ambitious and consequently we require professionals who are dedicated and self-motivated for the following positions:

- PROGRAMMERS** who understand Assembly languages, and who have a minimum of three years' systems experience.
- ENGINEERS** who are fully skilled in the technical field and who are capable of understanding and solving clients' problems.
- AUTHORS** who are senior people in their field and who respect the responsibility for their tasks.
- MANAGERS** who are business people from a technical background. The Project Manager is capable of taking full responsibility for all aspects of projects, from client contact to completion.

PARAMIN is particularly interested in applicants experienced in digital equipment. Data transfer and any form of data base, such as the master-slave type.

PARAMIN expects to pay directly for the above skills. We can say confidently that salary requirements will fit in to the right people.

PARAMIN is a company where the best professionals are respected and rewarded for their contribution.

If you are interested in what we are looking for, please contact us at 01-242 9356.

Paramin (U.K.) Ltd., South Close, Horsell, Woking, Surrey GU24 1TD.

Recruitment



In Informatics

Programmers Designers Consultants

U.K. and Europe

Salaries: to £17K (Europe) to £10K (U.K.)

An internationally renowned supplier of Data-Base and Teleprocessing Management Systems has retained Logistix to identify top calibre DB/DC Programmers/Analysts, Designers & Systems Analysts, Consultants and Project Leaders, for its Belgian Head Office and U.K. Regional operations.

THE COMPANY: Our client is an established world-wide software organization with its Corporate Headquarters located in U.S.A. and its European Headquarters situated in Bruxelles, Belgium. With 2500 clients and over 9000 installed products it is recognized as one of the leading independent software companies in the world.

THE CHALLENGE: The company plans to continue its rapid growth rate and success story by diversifying into the areas of technical information processing consulting. This started one year ago and within the next two years they will need 100 additional professionals in Europe and U.K. alone. The challenge is available for those seeking an established industry leader, with financial stability and opportunities for rapid advancement because of a fast growth rate. Their philosophy is that "growth needs people and people need growth."

THE PROJECTS: Some of the Company's recent projects have included:

- * Data-Base Production Control Systems.
- * Turn-key applications and systems software development.
- * Conversion to other DB/DC software.
- * Implementation of warehousing distribution systems.
- * Development of DB/DC Systems and Programming Standards.

The Company's involvement in projects ranges from planning or management through to the development of complete turn-key solutions. They are a very broad-based Consultancy operating in the entire market, solving problems by applying mainframe or mini-computer solutions.

THE PEOPLE: These very important positions will appeal to those:
Who are underutilised in their current jobs.
Who are worth more than they are currently earning.
With an adventurous desire to travel and who want to be involved with a diversified menu of projects.

People with appropriate linguistic skills will be given opportunities to travel and even relocate to Europe. Those who have the desire to improve their knowledge of French, Dutch and German will be able to be based in the U.K. but have opportunities to work on projects on the Continent. Those wishing to remain in the U.K. will have an opportunity to live and work in one of the most picturesque areas of the Thames Valley. Even then, there will be ample opportunity for travel within the U.K. and overseas should it be desired. Suitable applicants should therefore offer in-depth IMS, DL/I, TOTAL, ENVIRON, CICS exposure or similar DB/DC experience.

OPPORTUNITY PROFILES:
Programmer/Analysts with a minimum of 36 months applications programming experience with COBOL, PL/I or BAL in a mini-computer or mainframe environment working on commercial, financial or manufacturing projects. **Analysts/Designers** who have been involved in a feasibility study, the design and subsequent implementation of at least one complete system preferably in the areas of sales ordering, stock/inventory control, budgeting/forecasting, foreign exchange/investment and portfolio management. **Consultants and Project Leaders** who must demonstrate expertise in the areas of Project Planning, System Analysis and Design, "Top-Down" Development and Structured Programming techniques. **Consultants** who have the ability to act in a project-leader or project manager capacity will have a definite advantage.

THE BENEFITS: The higher than average salaries reflect the prominence which our client places in the acquisition of these key personnel. Additionally, extensive benefits include life and disability insurance, pension and medical plans, overseas allowances and liberal mileage allowances.

YOUR NEXT STEP: If you qualify please telephone or write immediately to arrange an initial interview in our London office. Successful candidates will be short listed to meet two of the Company's senior management who will visit our offices in July. Offers of employment will be made no later than 14 days after interview. It is hoped that for both U.K. and European positions appointments will be taken up in August/September.

Logistix, Freepost 32, London W1E 3YZ

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£10k+ Appointments £10k+

Systems Development Manager

Cambridgeshire to £10,000 plus Car

for a major UK group with a turnover exceeding £100m, an IBM 370 medium scale mainframe, and a nationwide network of distributed processors whose phased introduction is planned from early 1980 onwards. From mid 1980 the network is likely to be supported by an IBM 4300 series mainframe replacing the current 370.

Responsibility is to the Head of DP Services for the planning, development and implementation of a whole range of new application systems in a truly distributed processing environment, with users fully committed to the integration of distributed processors into active business management.

Demonstrable experience in systems and programming project management, determining and translating user requirements into effective DP systems, and communicating easily with users at all levels are important requisites. The career prospects are excellent and our client is seeking to appoint a person with potential for taking over as Head of DP Services in the course of time. Age is not important and the successful candidate is likely to have had experience of working in a small to medium sized DP installation.

Starting salary is negotiable to £10,000, plus a company car. Usual large company benefits are provided, together with appropriate relocation expenses.

Please write, or telephone, in complete confidence to ANTHONY SPURR, Executive Selection Division, quoting reference number G736, at the address below. Applications from either sex.

BIS Applied Systems Limited
York House, 199 Westminster Bridge Road
London SE1 7UT
Telephone 01-633 0866

BIS Applied Systems

PROGRAMMER FOR NIGERIA

A proven programmer, preferably with a banking background, is required for service in our associate company in Nigeria. Experience in ICL COBOL/PLAN and ICL 2900 Series Equipment essential.

Position in a small development team offers considerable challenge involving wide all round responsibilities. Plans include use of package developed in UK to transfer accounting to a 2904 machine.

Emoluments in Nigeria will be not less than N16500 per annum (approx £13,000 per annum at current rate of exchange). Fringe benefits include free furnished quarters in Nigeria, non-contributory pension scheme (subject to satisfactory medical), local Nigeria medical scheme etc. The assignment will be for up to 2 years initially during which period there will be generous home leave with passages paid. Thereafter, term may be extended by mutual agreement, or successful applicant will be offered a position within our Computer Services Department in Poole or elsewhere overseas.

If interested, please write giving full details of career to date to:

Colin Maloney, Head of Development,
Management Services Division,
Barclays Bank International Limited,
1 Wimborne Road, Poole, Dorset BH15 2BB.



£10k+

APPOINTMENTS

If you require personnel who command salaries of £10k and over take the opportunity of advertising in this special REGULAR FEATURE.

For further details contact:
Mark Williams on 01-261 8028
or
Mark Pulver on 01-261 8174

Assistant to Head of Computer Services

c. £8,000

COBOL Programmer/Analyst

The Ralph M. Parsons Company Limited, a world leader in engineering, design and construction is offering the security and prospects of a major organisation plus the satisfaction of working where you're not just one of the crowd.

Our Data Processing Group in modern offices at Kew Bridge, West London, is a small, independent section serving our engineering, accounting and administrative functions. Operations are based on remote batch terminals connected by dedicated lines to a CDC Cyber 175, Amdek VI and UNIVAC 1108 machines. Data preparation will be performed using IBM 029 and UNIVAC 1710's punches.

Responsibility will be for the day-to-day operation and the development of a comprehensive accounting package. At least 2 years' experience of COBOL.

programming in a commercial environment is essential and since the successful applicant will progress to giving systems advice to the users of existing engineering systems, a knowledge of FORTRAN and CDC Scope 3-4, IBM MVS2/CL, UNIVAC EXEC 8 Operating Systems would be an advantage.

A comprehensive benefits package includes an excellent salary, non-contributory pension scheme and free Life Assurance, sickness benefit scheme, IVs & subsidised canteen. Interested men or women should write or telephone Peter Edwards, The Ralph M. Parsons Company Limited, Parsons House, Kew Bridge Road, Brentford, Middlesex, Tel: 01-568 9282 ext. 125.

PARSONS

The Ralph M. Parsons Company Limited

Senior O&M / DP Systems Development Analyst

c. £6,000

Samuel Jones & Company Limited, a wholly-owned subsidiary of Wiggins Teape Limited, manufactures a range of adhesives and adhesive paper products which are marketed worldwide. Sales last year exceeded £21 million. This position has been created in line with the development of DP systems at the company's head office near Huntingdon.

The post involves completing feasibility studies, producing cost data to support capital expenditure and maintaining all in-house computer equipment required for new or existing systems. You will also be responsible for supervising and developing subordinate staff.

Candidates, preferably aged 28-35, must have had a formal training in business studies with

further specialised training in O & M. Systems analysis, design and presentation. This should be backed by at least three years' experience in developing computerised business systems. A good working knowledge of IBM 370 using COBOL/Assembler is preferred.

Opportunities for career progression within Wiggins Teape are excellent. An attractive range of company benefits include relocation assistance where appropriate.

Please write or telephone for an application form to: Adrian Hunt, Personnel Officer, Samuel Jones & Company Limited, Butterfly House, St. Neots, Cambs. Tel: Huntingdon (0480) 75351.

Wiggins Teape Limited



Digital Control Systems

Bristol

Up to £8595 (under review)

Are you in your twenties, with a good honours degree in electrical engineering or applied science and two years' practical experience in development or research? Can you demonstrate enthusiasm, initiative and the ability to apply advanced digital control methods to solve engineering problems?

Research Officers

We have two vacancies for people who may be able to contribute in one or more of the following fields:-

- Distributed microprocessor system design and implementation based on such systems as DEC LS1-11, Texas 9800 and Motorola 68000.
- Hardware, ergonomic and systems aspects of man/machine interfaces.
- Development of real time, on-line system and application software for multi-processor systems.
- Overall system design/implementation of supervisory, modulating and sequence control as well as monitoring and display schemes.
- Identification and simulation of plant models using advanced digital techniques e.g. 'Maximum Likelihood'.
- Applied research in discrete optimal control and estimation theory.

Successful applicants will join the control section of the Regional Scientific Services Department, engaged in the development of new control, monitoring and display systems, to meet challenging operational demands in the large generating stations in the South West. To meet this challenge, a large investment is being made in

microprocessor technology, and opportunities exist for exploration and development of new applications in this field. The Section is responsible for major projects on modern oil and coal-fired stations as well as the first advanced gas cooled nuclear reactor in the country.

You will be based at now, purpose built laboratories on the outskirts of Bristol, offering a pleasant working environment and a wide range of facilities. Bristol itself is an attractive city, offering reasonably priced housing and easy access to London and recreational areas in Wales and the South West. Generous assistance will be given to cover relocation expenses.

Starting salary will depend on age, qualifications and experience. Terms and conditions of employment are what you would expect of a large organisation.

Application forms obtainable by telephoning, Bristol (0272) 648236 during office hours, or by writing to the Personnel Manager, Badminton Down, Bridgwater Road, Bristol BS13 8AN, should be returned to him, clearly quoting Vacancy Notice Reference 393/79/CW by not later than 9th July, 1979.

Central Electricity Generating Board
South Western Region



CITY - Insurance

Department with a difference — small, friendly, offering responsibility and excellent career prospects to:

Systems Analyst to £6,750 + Benefits to £2,000

Analyst/Designer to £6,000 + Benefits to £1,500

Relocation expenses where appropriate

The company is a well established financial organisation, based in Cheapside, convenient for most main line and underground stations.

Currently using both mainframe and minicomputers, the small DP department is expanding, and now evaluating recently announced hardware with comprehensive on-line facilities.

There is a major development work-load including a new pensions system, an on-line new business system and the replacement of the current policy signing system, ensuring tremendous job interest and prospects. Applicants will ideally already have insurance/financial experience, or particularly relevant on-line skills.

The benefits include an annual bonus (c.10%), 4% Mortgage, Free Lunches, 33½ hour flexiweek, 3% Pension Scheme.

For more details or to arrange a meeting, lunchtimes or evenings in the City, write, telephone or complete the coupon.

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Please send me further details:

Name: _____

Address: _____

Bus. No: _____ (used discreetly)

Home No: _____

Positions open to male & female applicants, please telephone (24 hour service) for initial discussion or write to address below. QUOTE REF. CW151-97

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Computing Services Association

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Ford Motor Credit Company Ltd



COBOL PROGRAMMERS- 2 NEW POSITIONS

UK and Europe

up to £6,700 pa

Let's start with a few facts.

Ford Motor Credit is not only the world's second largest finance company in its own right but a wholly-owned and vitally important subsidiary of the Ford Motor Company.

There are excellent openings for ambitious programmers offering exciting opportunities and career progression not just in data processing but in positions throughout the Ford organization.

Right from the start you will be working on interesting projects in a stimulating environment.

PROGRAMMER-UK OPERATIONS

To help extend accounting and management information systems into new areas of the Company's operations. At least 2 years programming experience is required with a sound knowledge of COBOL, working knowledge of OS/JCL and familiarity with IBM 370/158. Knowledge of and interest in systems analysis and design are also necessary. A current driving licence is essential.

PROGRAMMER-EUROPEAN SALES OPERATION

A new appointment created by departmental expansion which involves adapting existing computerised retail accounting systems for European locations. Programs will be tested at Brentwood on one of Ford's UNIVAC 90/30 machines prior to site implementation. In your early twenties you should have a sound knowledge of COBOL together with capacity for problem-solving and on-the-spot decision-

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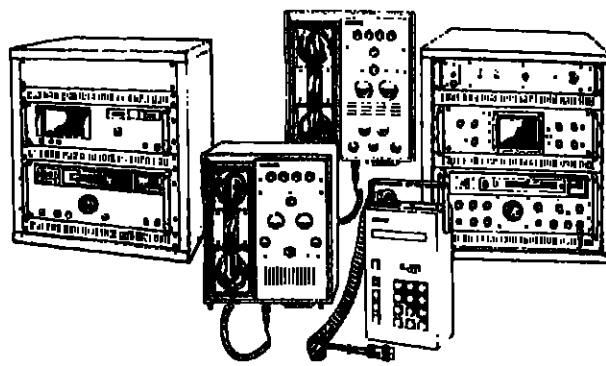
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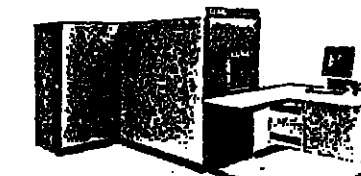
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MIDLANDS APPOINTMENTS

Lively and progressive scene for all DPeople

By Mike Wood

THE Midlands offers a wealth of variety of industries, professions, trades and crafts. Perhaps by virtue of this it can rightly be described as the barometer of the nation's industrial climate. Scrutiny of the Midlands scene can easily bring to light the national trends in terms of development, requirements and problems.

The data processing sphere in this region continues to be a lively and progressive environment for most users, suppliers and support organisations concerned with computing.

Perhaps the people most enjoying the current situation are the more established, proficient and presentable members of DP staff themselves. Surely at no time in history can such a body of people have had so much choice of environment and possibilities for enhancement of incomes and skills, short of being a marriage broker during the reign of Henry VIII.

There are provisos, of course. Programmers need to have a good commercial language background. Analysts and analysts-programmers need to have had actual involvement in the design and/or implementation of financial systems. Skills in the technical areas of software programming or scientific applications tend to be as highly valued, but obviously by fewer organisations. Such is the demand for established but not too senior staff that it is not uncommon to see a programmer increase his or her income by up to £2,000 in less than two years.

Indeed, one recent local study has shown an increase in starting salaries of 17% in the last three months compared with 15% for the previous six months. So the situation for the

middle range development staff remains extremely buoyant. In the majority of cases financial motivation - while never being less than an inducement - is by no means the primary consideration. A desire to be involved, extended and appreciated, allied with identifying an established career structure he or she can progress through, best describes the most attractive proposition to these people.

What of other areas of staff? Senior analysts, systems designers, DPMs and operators continue to enjoy improved rewards for their efforts but lack the opportunity of movement that the middle range people are afforded. People reaching senior positions in data processing stay, both in a senior position and in data processing. Best illustrating this bottleneck is the annual survey showing the average age of the occupants of each post. Each year the average age of the DPM increases by one!

Operations staff still have the age-old problem: half the operators are frustrated in their attempts to get to grips with Cobol coding sheets and the like, while

In this survey of the Midlands recruitment scene, Mike Wood, senior consultant with Computer Personnel Consultants, of Birmingham, says that the area continues to enjoy the ups and

the other half hungrily await the expiration of their operations manager (having already measured the size of his shoes).

A word about operators: I have seen in recent weeks quite a number of operators who, in terms of general presentability, would put many senior staff to shame - willing to relocate and asking realistic salaries because they have not been sent on training courses by their existing employers.

In general terms, however, employees are improving their ability to sell themselves to applicants. Disappearing are the old attitudes of "take it or leave it". If an applicant appears to be suitable, every effort is made to obtain his or her services. Suitability means much more than just technical skills. Personality is at least as important as experience and general capability.

Applicants are obviously

looking to improving themselves. As has already been stated, it is unlikely to be purely financial. Indeed, with so many staff enjoying reviews, pensions and fringe benefits, it takes a great deal more than a slightly increased salary to prise people away from the devil they know to an identical devil but in a different environment.

Illustrating this point is the recruitment performance of companies whose hardware and/or applications developments lag behind the general level. Regardless of salary, the inability to procure staff becomes acute. As soon as their development plans are implemented, they once again become an area of interest.

Perhaps the area of greatest influence is that of software houses. Variety of application, a high degree of involvement and responsibility, experience of different areas of equipment,

less sedentary positions and good financial reward all go to make a reputable software house, of which the Midlands has a good share, a very attractive proposition to many people researching the market.

Traditional bureaux through to OEM turnkey operations are all reaping the rewards of micro technology and software development. Consequently, they are hungry for established, competent and presentable staff capable of bringing the speediest return. So prolific must be the prospective user base in the Midlands area for the software houses that many still operate without any recognised sales force - or perhaps it's cheaper that way?

The software house does not suit everybody and users are still able to retain staff who are not attracted by or are not suited to the software house environ-

ment. However, DP people have a history of being very loyal to their profession rather than their employer. It is easier for them to identify their career with a software house which relies solely on their efforts rather than as part of a cog in a complex mechanism.

Despite the efforts I have mentioned being made by commercial and industrial organisations to procure and retain staff, there exists a disturbing vacuum of personnel in the middle range. While accepting the probability that high level languages and more sophisticated operating systems will eventually produce a radical change to the existing scene, the problem exists now and will become more intense over the next few years.

There appears to be only one solution to this problem. Employers must be afforded the resources to take a greater induction of trainees. The Midlands has an abundance of institutions producing a variety of "qualified trainees". Computer science degree holders are currently favourites with employers and have relatively little problem in slotting into a suitable position by virtue

of their environmental experience during placing periods. For the rest, though, it remains a more difficult struggle.

Many DPMs have remarked to me of their admiration for 30-year-old engineers and the like who have made a conscious and committed decision to transfer to computing via, say, a five-month TOPS course but are unable to pursue matters further because of the uneconomic situation of being non-productive in an installation for a period of months.

Surely each employer of reasonable size must take it upon himself to bring pressure to bear upon the powers-that-be to redress this situation. Governments have supported and sponsored the retraining of individuals in a most laudable manner, but now surely is the time for a little more strategic thinking from government, perhaps in terms of increased grants to employers recruiting trainees, or from employers themselves to endure a short period of pain but eventually avoid the impending drought of available competent staff.

To conclude, the Midlands continues to enjoy the ups and suffer the downs experienced by the industry as a whole. Where it differs, perhaps, from other regions is in its ability to attract the less parochial people from all parts of the country. Variety - in terms of professional and social activities, ease of travel, busy but not hectic atmosphere and relatively inexpensive housing (particularly compared with the south-east) - all add up to an environment which native Midlanders enjoy and so, if might appear, do many emigrés from other parts of this micro-empire of ours.

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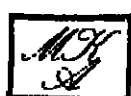
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Application forms to be returned by 20th June, 1979, can be obtained with further particulars from the Principal, Coventry Technical College, Butte, Coventry, CV1 3PD, Telephone Coventry 67221, Ext. 270.

MIDLANDS APPOINTMENTS

PROGRAMMERS

NEI International Combustion Limited, is a major manufacturer of boiler plant, process plant and mechanical handling equipment for both the UK and overseas markets.

Opportunities have arisen for programmers, preferably with on-line experience on ICL computers, to join a team located in our offices 1½ miles south of the city of Derby, which is in the pleasant East Midlands area where property prices are more reasonable.

Candidates, either male or female, should ideally have programming experience supported by appropriate qualification. We can, however, also consider applications from operators who want to move into programming. The salaries for these positions will be commensurate with experience and the Company can offer 31 days annual holiday (including statutory), free life assurance, and active sports and social club, and generous relocation expenses where appropriate.

Please telephone or write for an application form to: P. L. Nice, Senior Personnel Officer, at the address below.

NEI International Combustion Ltd.,
Sinfine Lane, Derby, DE2 9GJ.
Telephone: 0332 23223.

NEI International
Combustion Limited,
Sinfine Lane, Derby DE2 9GJ
Telephone: 0332 23223



HEREFORD AND WORCESTER COUNTY COUNCIL

HEREFORDSHIRE TECHNICAL COLLEGE

Applications are invited for the post of

Lecturer Grade II

In the Department of Science and Mathematics, duties to be performed as soon as possible. Candidates must be suitably qualified to teach Computer Studies and Mathematics or Statistics. Experience of industrial/commercial application of computers would be an advantage.

Salary Scale: Lecturer Grade II £4101 to £6558 per annum (under review).

Further details and application forms can be obtained from the Principal (Ref. GEL), Herefordshire Technical College, Folly Lane, Hereford HR1 1LS, to whom completed application forms should be returned as soon as possible.

Barratt Shoes of Northampton have the following vacancies in their D.P. Department.

CHIEF PROGRAMMER

Suitable for a Senior Programmer with five years' experience of COBOL and PLAN. It is envisaged that suitable candidates will currently not be earning less than £8000.

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Minimum 2 years' experience of COBOL plus the ability to work on their own initiative are the requisites for this appointment.

The current configuration is a 48K 1901T with tapes and discs.

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The Polytechnic's Computing Service is based upon a large ICL 2960 running the VME-A operating system, and an ICL 2904 running the MINIMAC system. A sophisticated batch service is provided on both a central site, and at an RJE station. There is a developing network of linked interactive terminals, located throughout the Polytechnic, and in local schools. A wide range of software is available to support the teaching and research of the Polytechnic.

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Up to £4,632

To join a small team working on projects in support of the whole spectrum of the Polytechnic's academic and administrative work. As well as programming in traditional scientific and commercial languages, you will also install and support statistical and other packages.

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Up to £4,632 + shift allowance

To be responsible for the operation of the two central computers and associated terminal network equipment including the RJE station, under the direction of the Chief Operator. You should have extensive operations experience, some of which should have been gained on ICL systems, with a general knowledge of communications equipment and operations support activities. You should have reached at least 'A' level standard of education, and have a flexible approach and an ability to learn new techniques are considered essential. Post No. 774.

Please write for an application form, quoting the appropriate reference number to: Staff Office, Portsmouth Polytechnic, Alexandra House, Museum Road, Portsmouth, or by telephoning 27681 Ext. 317.

CONTRIBUTORS REQUIRED FOR NEW COMPUTER MAGAZINE

The Business Computer Newsletter is a new magazine for Chief Executives, financial controllers and others in smaller companies who are responsible for installing computerised business systems. It is designed to help them deal with the computer industry and to make an informed choice of hardware, software and systems house.

We would be happy to receive contributions from consultants or others who have special knowledge of industry packages, including for example, estate agents, solicitors, printers, truck operators.

We are also interested in cautionary tales provided they are instructive. We don't carry advertising, so we don't have to make the usual accommodations.

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Post No. WCT 41
Salary Grade Tech. 5 — £4,461-£4,761
+ £312 supplement

Suitably qualified and experienced persons required. Candidates should possess a relevant HNC/HND or equivalent qualification, and should have substantial experience of computer systems.

Further particulars are available on request from the Chief Administrative Officer, Wigan College of Technology, Parson's Walk, Wigan. Tel. Wigan 494911.

Application forms are obtainable from the Chief Personnel Officer, Civic Centre, Millgate, Wigan. Tel. Wigan 44891 ext. 110 to whom all completed applications must be returned no later than 8th July, 1979.

SYSTEMS DEVELOPMENT ENGINEER

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Circa £6,500 plus car.

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They can now offer a challenging career opportunity to an experienced systems analyst who will play a leading role in the development and application of computer based total systems for control and information purposes.

Although based on Merseyside, you will conduct investigations into management problems in multi-site locations on Merseyside and in the Midlands, working closely with all levels of management to provide effective solutions.

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General conditions of employment are good with excellent career prospects for the individual who can make a real contribution.

Please send comprehensive career details or telephone for an application form to:

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Telephone Southport 0704 38776

THE DALTON PARTNERSHIP
Management Selection & Recruitment Consultants

DAN-AIR

Manager — IBM System 3 Installation CROYDON

Our office at East Croydon comprises Reservations and Accounts Departments and an IBM System 3 Installation. The function of the System 3 Installation, which has been in operation for about 2½ years, is to provide a service for our Scheduled Services Accounts Department.

The successful candidate, male/female, will need to have had at least 3 years' data processing experience, including a knowledge of RPG2 acquired in an IBM System 3 Installation, and must possess the ability to assume overall responsibility for the department, of nine people.

We offer good conditions of employment with generous air travel concessions. A contributory pension scheme is in operation.

Applications, giving details of age, experience and current salary, should be sent to Paul Finigan, Personnel Manager, Dan-Air Services Ltd., 36/38 New Broad Street, London EC2N 1NH or you may telephone Mrs Pam Forsyth on 01-638 3240 for further details and an application form.



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UNIVERSITY COLLEGE OF WALES ABERYSTWYTH COMPUTER UNIT

COMPUTER OPERATOR

Applications are invited for the above post in the Computer Room from which a locally based service, shortly to be based on a Honeywell 8080 computer, and one supported from the Manchester Regional Centre are provided. GCOS operating experience will be advantageous but is not essential.

Salary in the range £2,847 to £3,369 per annum plus shift allowance.

Further particulars and application form can be obtained from the Registrar, The University College of Wales, Gŵylfa, King Street, Aberystwyth SY23 2AX. Closing date for applications 28th July, 1979.

Financial Analysts + Programmers London

An International computer company offering time-sharing and batch processing, based on IBM mainframes, is seeking analyst programmers at both senior and junior levels, to join a newly formed development team. Candidates should offer proven ability in financial systems and development on applications ranging from machine accounting through to management accounts. They must also be able to liaise effectively and articulately with the Financial Director and all levels of management.

Every opportunity will be given to develop skills, contribute ideas and expertise, and to shoulder responsibility. Salaries will be scaled to reflect not only achievements to date, but also potential. Of prime importance is a sound commercial background demonstrating stability and a record of success on prior projects. Benefits, apart from an attractive salary, include incentive bonus, profit sharing and LVs.

Interviews will be held in London end of June beginning of July. Salaries will be in the range of:

£5.5 — 8K
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London W1. Tel: 01-629 5438



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For contracts commencing July we urgently require ICL 1900 COBOL/GEORGE III programmers with financial applications experience.

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Contracts to commence mid-August in South London. Must have Univac 1100 experience.

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IBM 370 ASSEMBLER programmers with VSAM experience, for three-month contracts in Croydon, to start mid-July.

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We require PL/1 DOS/VS programmers, knowledge of IDMS an advantage. Six-month contracts in Kent. Start 2nd July.

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An experienced ICL programmer with a minimum of three years' COBOL plus experience of JCL and Macro, EXEC 1+ knowledge an advantage. Immediate start.

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to manage and play a technical role in the preparation of specifications and plans, including administration, for hardware development projects.

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up to £6K

to be responsible for the design and development of hardware from specification through to acceptance and implementation. This will involve the interface of non-CTL equipment to CTL computers with the emphasis on the use of microprocessors.

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Both posts, open to men and women, are based in Hemel Hempstead. Salaries are negotiable according to experience and include excellent company benefits. Interested? Then please write or telephone for further details/application form to Jim Parle, Personnel Officer, Computer Technology Ltd., Eaton Road, Hemel Hempstead, Herts HP2 7EQ. Tel: (0442) 3272.



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- * A COMPANY that can offer an unrivalled range of work: mini computer, micro computer, application packages, standard software, compilers, operating systems, techniques and specialisms.
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"Since applications, in this instance, will be forwarded direct to our client, please list in a covering letter any companies you don't wish to approach."

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SALARY UP TO £7,600

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If you would like any further information telephone Mike Barber on 01-278 2488. Application forms may be obtained from the Personnel Department, 46 Brittenia Street, London WC1X 8RD.

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SENIOR LECTURER IN COMPUTER SCIENCE

Applications are invited from people with an appropriate degree wishing to teach at graduate and post graduate level in one or more of the following areas:

Microprocessors, real-time systems, systems software.

Salary Scale: Senior Lecturer £8081-£7085 (bar) — £7572 (under review) + £159 local weighting.

Informal enquiries by telephone to Mr J. Davis, Computer Science, extension 330.

Application form and further details available from the Staffing Office, The Hatfield Polytechnic, P.O. Box 109, Hatfield, Herts or telephone Hatfield 66100 extension 309.

Closing date: 6 July.
Please quote reference: 243.

EDINBURGH REGIONAL
COMPUTING CENTRE
SOFTWARE SERVICES
GROUP

The Centre has a vacancy in the Software Services Group for a

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The post will involve working as a member of a team which is developing and supporting a number of complex, and their related software environments, on ICL 2800 series machines, using the Edinburgh Multi-Access System and the ICL VME/B and VME/C operating systems.

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For further details and an Application Form, contact The Secretary, University of Edinburgh, The Old College, South Bridge, Edinburgh: 010 612 (quoting reference 7013), to whom completed forms should be returned by 12th July 1979.

THE UNIVERSITY
OF MANCHESTER

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Applications are invited for the post which is available immediately. Candidates should have a good first degree and preferably a higher degree in Electronic Engineering or some related discipline and also considerable experience in one or more of the following fields: Integrated Circuit Design, Computer Aided Design of circuits or systems, Microprocessor Design, Data electronic techniques, Memory devices or systems, Interconnection techniques, High Density packaging and cooling of electronic systems. Preference will be given to candidates who wish to pursue research in aspects of Semiconductor Electronics relating to computers and who wish to advise and cooperate with others designing and building computer type instrumentation and computer systems both large and small. The candidates will also be expected to teach undergraduate and postgraduate students as the ability to lecture is essential. The salary range will be within the range £8,182-£10,087 (scale 1978-79) plus pension. The successful applicant will be invited to interview by June 28th from the University, Manchester M13 9PL. Quote ref 118/78/CW.

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This prestigious Banking corporation is situated at the heart of the Great Lakes amidst what must be described as breathtaking rural beauty. Their D.P. department comprises IBM 370/158, 168, 3031 + 3033 operating under OS MVS, IMS/VS.

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You will be offered an initial contract of at least 1 year's duration during which time you will receive benefits commensurate with a prestigious banking organisation. These benefits include Blue Shield, Blue Cross medical insurance, paid return fares at start and mid project, initial paid accommodation etc. Interviews will be held in London within the next month and offers made within 14 days. You will be discussing at a salary range around:

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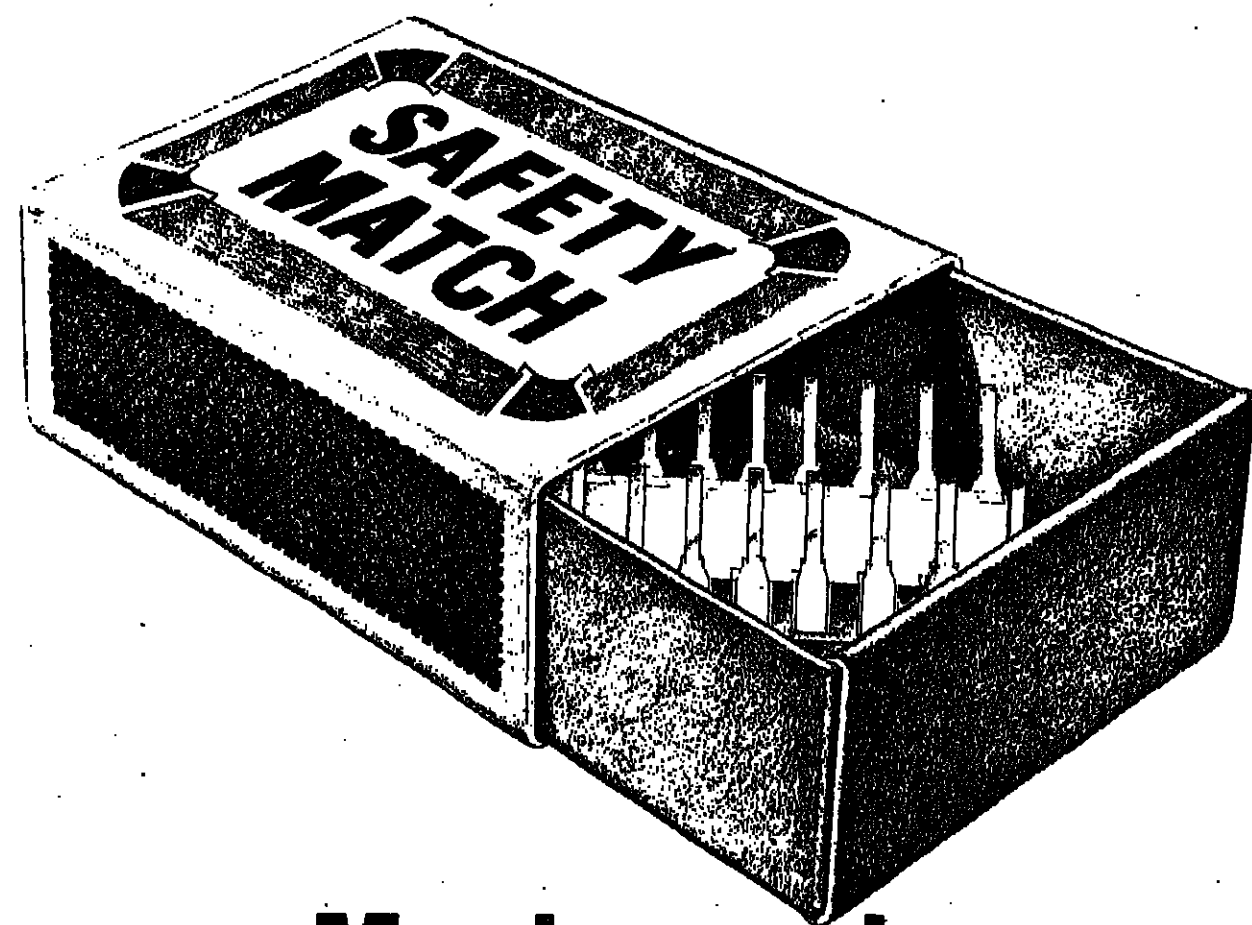


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Employing sophisticated components like Motorola 6800, Texas 9900 and Interall 6100 both singly and in networks on a wide range of defence and radar applications, you'll be given every opportunity to develop your professionalism and pioneer new

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For full details, please contact Chris Hill at Marconi Avionics Limited, FREEPOST, Elstree Way, Borehamwood, Herts WD6 1BR. Telephone 01-953 2030 ext. 3449. Please quote reference MA 79090.

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We require a computer operator with knowledge of programming in FORTRAN or BASIC to be responsible for running, maintaining and developing a number of management and accounting programmes on a Harris 5123 Computer now being installed.

Previous commercial experience is not essential.

A salary of £4,000 per annum is envisaged.

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for Chemical Pathology Dept. to work on the daily operations of an on-line Laboratory Computer System which is undergoing further development. The system is based on a Modular 1 Computer with disc backing store and multiple terminals. The job offers considerable responsibility and the successful applicant will be expected to be able to work to time schedules and to adopt a disciplined and professional approach to his/her work.

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Basic salary £3806 to £4776 inc. London weighting. Shift allowance payable. Review pending.

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Fiji

Senior Systems Analyst/Programmer

Up to £9,230 plus allowances

Candidates must possess a relevant degree or equivalent qualification with three years systems experience, or if unqualified, have six years EDP experience in systems with a programming background in COBOL. Experience of ICL equipment, RPG II programming and on-line applications would be advantageous.

Duties will be to investigate potential computer applications, design and document systems, prepare programme specifications and supervise implementation. The officer will also be responsible for training and supervising programmers.

Salary includes a substantial tax-free allowance (reviewed annually) paid under Britain's overseas aid programme. Basic salary attracts 25% gratuity.

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We are currently selling these products at about £500,000 per year, and look forward confidently to a substantial increase.

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Salary, commission, and a company car, will make a very attractive offer. This is a position of great importance to the company, and we are looking for a high calibre person to fill it.

Please reply to Peter Rose, General Manager.

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...who can handle responsibility

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This position covers all aspects of computing in a small department which works on a two shift system - 9.00am-5.00pm and 1.00pm-9.00pm - alternating weekly. You must be capable of accepting the responsibility for running the evening shift on your own. Opportunities exist for training in programming techniques at a later stage.

You should have relevant experience on similar equipment and be aged in your 20's.

An excellent salary will be offered with benefits which include four weeks holiday, luncheon allowance, season ticket loan scheme and a non-contributory pension and life assurance scheme.

Please telephone for further information and an application form or write with full career details to:

Howard Statham or Paul Wood,
Marathon International Petroleum (GB) Ltd./
Pan Ocean Oil Corporation,
35/38 Portman Square, London W1H 0BN.
Tel: 01-486 7211.



DORSET COUNTY COUNCIL

DORSET INSTITUTE OF
HIGHER EDUCATION
(Wallsdown, Poole)

Computer Manager

GRADE SO1 £5,232 to £5,568
(inclusive of supplement)

The Computer Centre at the Wallsdown Campus of the Institute caters for education users throughout the County of Dorset, as well as for courses run by the Institute.

You will be a member of the Institute staff responsible to the Director for the day-to-day management and operation of the Centre and will be involved in the development of the Centre. Technical staff at present consists of two operators, and one punch operator.

A detailed knowledge of computer technology and programming using such languages as BASIC and FORTRAN (preferably in an education context) are essential, and you must have an ability to operate an I.C.L. 2903. Experience in managing and operating a small computer unit would be an advantage.

Removal and legal expenses in approved cases.

Application forms, returnable by July 15, 1979, and further details from Chief Administrative Officer, Dorset Institute of Higher Education, Wallsdown Road, Wallsdown, Poole BH12 5BB.

(Please quote: ED HEB 71).

London Borough of Waltham Forest
WALTHAM FOREST COLLEGE
Department of Sciences

Lecturer I in Computing Science

The post will involve teaching various aspects of Computing Science to a wide range of existing courses and the setting up of new courses. Candidates should preferably have had experience in some aspects of Computer Technology although people who have a grasp of Mathematics coupled with a willingness and interest to enter the field of Computing will be considered.

Salary Lecturer Grade 1: £3,192 to £5,334 plus London Allowance (£327 (salary review pending)).

Post tenable from 1st September, 1979.

Application forms and further details available from the Principal (Staffing), Waltham Forest College, Forest Road, Waltham Forest, London E17 4JB. Tel. No: 01-527 2311, Ext. 258.

Closing date: 2 weeks from appearance of advertisement.

PROGRAMMER

We have a major development programme which involves

- the implementation of a large branch terminal network using IBM 3600 equipment.
- the implementation of a database system.
- the extension of local TP using 3270's

We need to enhance our existing team to ensure the success of this demanding programming and are thus able to offer a Programmer an exciting opportunity to extend his/her experience.

Applicants should have a minimum of two years' experience using PL/1 or Assembler. Preference will be given to applicants with experience using DL/1 database system or 3600 financial terminal equipment.

This appointment will be based in our Head Office in Bristol. A realistic salary, which is reviewed annually, will be offered, and there are attractive fringe benefits, which include a contributory Pension and Life Assurance scheme, assisted membership of BUPA/WPA and staff house purchase facilities.

Please write in the first instance with brief details of your age, qualifications and previous experience to: The Personnel Manager, Bristol & West Building Society, P.O. Box 27, Broad Quay, Bristol BS99 7AX.

Bristol & West BUILDING SOCIETY
A MEMBER OF THE BUILDING SOCIETIES ASSOCIATION

LI/II IN COMPUTER STUDIES

Applications are invited for a lectureship in Computing in the School of Economics and Accounting. The School runs a BA Economics course, a full-time Accountancy Foundation course and a range of part-time professional courses.

Applicants should be graduates, preferably with relevant industrial or academic experience, and above all should be eager and willing to liaise with lecturers in other disciplines to form cohesive, vocationally oriented courses.

Salary: LI £3866 to £5060 pa; LI £4576 to £7032 pa, both figures inclusive of London weighting.

Application forms and further details from The Chief Administrative Officer (TD/uc), Ealing College of Higher Education, St Mary's Road, London W5 8RF.

Closing date: 14 days from appearance of advertisement.



West-Coast USA T.P.+Database

A Multi-national corporation based in Southern California operating IBM 370/158's, 3031 and 3033's have retained Logistix to identify Database designers + Analysts and T.P. applications programmers especially with experience of either IMS or CICS. Programmers will be particularly qualified in the use of ANS COBOL and will either be conversant with or willing to learn structured programming techniques.

Initial Contracts will be for a 1-2 year term and will be offered to suitable applicants able to substantiate Data-base and/or T.P. skills at a technically demanding level.

In addition to highly competitive salaries our client will be providing attractive fringe benefits to cover return air fares to the U.S., paid initial accommodation, medical + dental insurance, productivity bonus etc. Our clients will be in London at the beginning of July and offers will be made within 14 days. Salaries will be in the region of:

\$30K

Comparable opportunities coast-to-coast



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PROGRAMMING TEAM LEADER

CENTRAL LONDON c. £7500

This is an opportunity to manage a small team of programmers within the programming department of a major ICL 2900 installation. Most of the work is related to new applications, including on-line, real-time and database systems.

You would be involved in:

- development of overall program design
- quality control and scheduling/monitoring of the team's work
- guidance, training and motivation of programmers
- participation in the development of code, systems testing and technical problem solving

The opening will interest a senior programmer with:

- at least four years' programming experience, including sound COBOL (on any hardware)
- experience in controlling a small team, or demonstrable leadership potential
- (ideally) knowledge of one or more of the following — VME/B, large applications, real-time, database management systems

Career prospects are good (with a salary increase within six months) in an installation with a lot of development work on hand, and appropriate further training on modern techniques will be provided as required.

We have been retained by clients to recruit for this post. Please ring us in confidence, quoting ref. 641, or leave a message on our answering machine and we'll contact you.

EDP SYSTEMS LTD
52-53 Margaret Street, London W1N 7FF
Telephone 01.637 5796 (24 hours)

DATA PROCESSING SUPERVISOR

WEST BYFLEET, SURREY

Required for a technical consultancy mini computer.

Experience: Previous experience on IBM 1130 systems operations or equivalent a necessity. Knowledge of Fortran IV essential. Assembler and Cobol an advantage.

The Job: Supervision of and responsibility for all aspects of computer operations. Hands-on operation of computer system and peripherals.

Running jobs and checking output. Programming and liaison with user staff for either full programming or de-bugging of technical programs.

The System: Digital Scientific Mola 4. 32K main core. 16K auxiliary core. Operates under IBM 1130 emulation mode. Card reader 000 cpm, Line Printer 300 lpm. Multidisc (2) 40 megabytes, single disc, 1 megabyte. Plotters, digitiser and tape unit, terminals.

The position requires dedication and drive with the ability to anticipate initiative and anticipate job needs. He articulate and mix with all staff levels.

Salary £8 000 per annum negotiable. Fringe benefits.

Applications in writing to

Miss C. J. Horton
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EDUCATION DEPARTMENT
MONKWEARMOUTH COLLEGE OF FURTHER EDUCATION
Department of Science and Technology

LECTURER I (E3192-E5334)

LECTURER II (E4101-E5585)

IN COMPUTING AND DATA PROCESSING

Applicants should have appropriate qualifications and experience. A professional qualification in Computing or Data Processing would be an advantage. In the case of the Lecturer Grade II, applicants should have commercial experience in programming or systems analysis. Commencing salary dependent upon qualifications and experience. Application forms and further particulars available upon receipt of a stamped, addressed envelope, from the Principal, Monkwearmouth College of Further Education, Swan Street, Sunderland SR8 1EB. Closing date for applications: 4th July, 1979.

Borough of Sunderland

IBM COBOL

PROGRAMMERS

CENTRAL LONDON

PROGRAMMERS

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SENIOR PROGRAMMERS TO £7,500

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FURNESS WITHY SHIPPING

We are an international shipping organisation, part of the Furness Withy Group of Companies. Our recently-formed computer department, currently operating an I.C.L. 2904 in London and remote 7502s, is embarking on a number of new, major projects which will form an important and integral part of the Group's business operations. We are building a carefully selected team of experienced professional computer staff to define and subsequently develop the variety of systems required by a Group of this standing and there is now an opportunity for three experienced staff to join our team.

SYSTEMS ANALYST

CIRCA £7,000 PER ANNUM

LOCATION—LIVERPOOL
(PACIFIC STEAMSHIP NAVIGATION COMPANY)

You will have a demonstrable record of achievement which will include project responsibility for the design and successful implementation of a major new system. Whilst previous experience in the shipping industry would be advantageous, it is not essential. Applicants must, however, be capable of working effectively with all levels of user management and staff and should have a programming background. The successful applicant will work in Liverpool as project controller of a mini-computer-based freight documentation system.

SENIOR PROGRAMMERS

CIRCA £6,500 PER ANNUM

LOCATION—CITY OF LONDON

You will have at least three years' programming experience in Cobol and R.P.G. and will have been involved in the design and implementation of at least one major system. Experience in a communications environment would be a distinct advantage. As part of a small team you will have a leading role in the design, writing and implementation of programs.

For the right people career prospects are excellent and they will be encouraged to contribute to the data processing plans of the organisation.

Fringe benefits include B.U.P.A., subsidised staff restaurant, interest-free season-ticket loans and contributory pension scheme.

For further information contact the Computer Manager on 01-481 2020 (ext. 2814) or write, in complete confidence, giving relevant details of age qualifications and experience to: Mr. F. W. Wansbury, Personnel Manager, Shaw, Savill & Albion Limited, 52 Leadenhall Street, London EC3A 2BJ.

International Statistical Institute World Fertility Survey

SYSTEMS PROGRAMMER

The organisation: WFS provides back up and support to a worldwide programme of population research. It is based in London but financed by international agencies. The professional staff of over 50 people include demographers, statisticians and data processing experts from 14 different countries.

The hardware: An HP3000 (II) with 1/2 mb of store and 350 mb of disc. All work is done through on-site terminals.

The job: This is a new post to support the work of an existing systems programmer. Most of the load on the computer is related to data analysis and data archiving and the systems programmers ensure that the basic software is maintained and developed as appropriate and provide technical advice to the general users. Technical assistance to a developing country may possibly be assigned as well, requiring occasional overseas travel.

The qualifications: The ideal candidate would be a graduate with a general computer systems background of several years (preferably with HP3000 experience) and some acquaintance with statistical data processing. A second language (French or Arabic) would be highly desirable.

The rewards: WFS occupies pleasant offices in a useful corner of London.

We offer the successful candidate a challenging opportunity in an international environment with a salary of not less than £9,000 per annum.

Send curriculum vitae to:
Deputy Director for Data Processing
International Statistical Institute
35-37 Grosvenor Gardens
LONDON SW1W 0BS.



We're successful because our staff are

Data Logic operates at the forefront of computing, applying the very latest hardware and techniques to practical commercial problems. We cover the range from mainframes to the smallest computers. We are leaders in the use of microprocessors for applications that not so long ago required far larger machines.

Many of the systems we supply go far beyond providing extra speed and cost savings. They will revolutionise the way the user organisations operate. Several projects involve dispersed networks of ten or more minicomputers. Our largest turnkey system incorporates twenty-three machines and close to three hundred display terminals across the country — a totally new system which will serve almost every function within a leading company. A new police contract involves the first use in the UK of a mini for a complex data retrieval

application — with our own advanced methods for rapid, generalised record searches.

The exceptional scope and quality of work is important to our staff. We can match their individual experience to their projects. Equally, we can ensure that each project adds to their experience. As computing itself develops, so do they.

Over the past year Data Logic has grown dramatically in size, in scope of work and in reputation. Our expansion has meant unrivalled opportunities for career progression. We are not prepared to promote people before they are ready for it. But when they are ready — and we give all the assistance we can — the positions as senior programmer, senior analyst, project manager and consultant will be there waiting for them.

The reason is simple. We know that we are successful only if our staff are.

Senior Software Staff

(Ref PS/32/CW) For mainframe, mini computer and mixed processor systems, usually supporting terminal networks. Increasingly Data Logic's turnkey projects involve minicomputers at multiple sites.

Applicants must have at least five years experience including some work in consultancy, system design or team management. Substantial knowledge is required of either high level language implementation on a leading mainframe or assembler language development on DEC, Data General or other leading minicomputers. We are especially interested in experience of:

- database systems
- distributed systems
- data communications
- telemetry
- operating systems design and implementation.

Salaries will be highly competitive and a company car is provided to staff at senior team leader level or above.

There are vacancies at our Greenford, Birmingham and Manchester offices.

Programmers

(Ref PS/33/CW) For both mainframe and minicomputer projects which include commercial applications, monitoring and control, and scientific analysis.

Applicants should have at least 18 months programming and/or analysis experience in high-level language or assembler on any leading mainframe or minicomputer.

This is an outstanding opportunity to gain experience in the development of complex high performance software. Our programmers work in small teams, taking considerable responsibility for distinct areas of the total system.

Salaries will be highly competitive. Vacancies exist at our Greenford, Birmingham and Manchester offices.

Our profit sharing scheme ensures that staff benefit from the company success they create. Regular career appraisals provide a direct link between individual achievement and personal rewards.

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Kathy Martin
Data Logic Limited
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W. LONDON/MIDDX BORDER Circa £5100

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The present configuration comprises a 370/138 running under DOS/VS POWER/VS and four major real-time systems are currently being developed to run on a newly created network of DEC PDP11 computers. The persons appointed, therefore, will be keen to progress their careers and will demonstrate an ability to learn and adapt swiftly to new techniques in a busy environment.

A three shift system covering five days a week is in operation. The company offer valuable bonus schemes and a good base salary comprising a package which may be in excess of £5100 and, as one of Europe's major motor manufacturers, they also offer an exclusive discount car purchase scheme.

Ref. SW2/2106

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With a substantial programming background

c. £7000

Reading

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Specifically you will be supporting our George operating systems and DME using 2904, 2960 and 1904S machines. You will be the Centre's technical expert in this field, with about half our operating systems under your control.

As well, naturally, as your responsibility for timescales and budgets, we shall expect you to keep the service developing and expanding. Your heavy involvement with both internal and external customers will call for considerable skill in providing technical advice

and assistance. You will provide leadership for a small team in which you will need to foster and maintain a high degree of expertise.

We are looking for someone with a solid background in GEORGE 3 including both operations and programming experience.

Career prospects are excellent. This appointment, for example, could lead to that of Systems Support Manager or senior programming or contract work anywhere in our organisation.

The salary will be in the region of £7000, and you would be eligible for our 1979 Productivity Bonus Scheme. We will also help with relocation expenses to the Reading area where appropriate.

Please contact Mick Smith, Manager, Datskil Systems Centre, ICL Datskil, 128-130 Cardiff Road, Reading, quoting reference CW1413. Tel. Reading (0734) 582041, at any time.

ICL Datskil
The Computer Professionals

Cable and Wireless UK Services Ltd, a company within the worldwide Cable and Wireless Group, design and install a wide range of telecommunications and data processing systems. We are currently turnkeying commercial Data General mini-computer systems to both large and small organisations with all types of applications, and due to phased expansion now require the following staff:-

Field Systems Consultants

Salary range £6,500-£9,000 + Car

London - Leeds - Birmingham

A number of positions exist for expert Consultants to provide support for the Sales Executives. These demanding positions offer unlimited scope for career progression and would suit computer professionals with experience in mini-computers and ideally with a communications and/or accounting systems background.

Programmers

Salary range £4,500-£6,000

London

If you are an ambitious Programmer with experience of mini-computers, COBOL or related high level languages, here is your opportunity to grow with a fast moving team providing a valuable back-up to our Consultants. Career progression is up to you - there is plenty of opportunity.

Sales Executives

Earnings up to £15,000 + Car

London - N. England

For enthusiastic and self motivated Sales Executives earnings of around £15,000 p.a. are realistic. Previous hardware sales experience is a must, and we will provide all the support and product training you will need. If you have the drive and initiative to sell to a variety of markets, we will give you the opportunity to take your career right to the top.

Production Control Specialist

Salary range £7,500-£9,000 + Car

London based

Our expansion has taken us into the fast moving field of interactive computerised manufacturing systems. If you have the engineering know-how and the ability to solve production problems in an industrial environment, combined with a knowledge of computer based systems, this newly created position is the challenge your career has been waiting for. Extensive UK travel is involved.

The rewards we are able to offer are excellent and well matched by the job satisfaction involved in developing our computer activities as part of a planned expansion programme. Promotion prospects are excellent and company benefits include regular salary reviews with cost of living allowances, season ticket loans and an excellent pension scheme.

For further details and an interview please contact:
Sue Mathews, Cable and Wireless UK Services Ltd, 83 Blackfriars Road, London SE1 8HQ. Tel: 01-633 9577.



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As the leading computer recruitment consultancy in Essex, we have many interesting and challenging positions on our books in both Essex and London. Here are just a few:-

CITY

SYSTEMS ANALYSTS

to £8,500

PROGRAMMERS

to £7,000

SYSTEMS PROGRAMMERS

to £7,100

Our client, a multinational company, have a large IBM installation and are looking for persons with sound experience in the above listed disciplines. For all these vacancies IBM main-frame experience is required. Systems Programmers must have a sound Assembler background. Application Programmers must be conversant in PL1 and/or Assembler. Systems Analysts must be experienced in commercial applications. Basically you must be good. Are you?

For more information about any of these permanent positions, plus many of the other interesting opportunities we can offer you, phone Martin Walton on:

BRENTWOOD (0277) 212021

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Computer Systems Limited

or write to him at LINSCOTT COMPUTER SYSTEMS LIMITED, P.O. Box 74, BRENTWOOD, ESSEX CM15 0B7.

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ESSEX

PROJECT LEADER

to £6,000

ANALYST PROGRAMMER

to £6,000

SYSTEMS PROGRAMMER

to £6,800

Our client, a large publishing organisation, with an IBM installation operating under DOS/VS and CICS, are looking for persons experienced in the above listed disciplines. The Project Leader and Analyst Programmer will have at least 3 years programming experience and although not essential, a knowledge of PL1 would be an advantage. The Systems Programmer will have a sound knowledge of Assembler. This company offers the right people an interesting and secure future. Are you the right person?

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Industrial Computer Systems £4075 to £6442 and Bonus

We are seeking an experienced and energetic technical writer whose primary task will be to write and produce a continuous output of high quality technical brochures and leaflets. All aspects of literature production are involved, from initial planning and collection of technical information to preparation of copy and the supervision of photography, design and printing. There will also be opportunities to participate in related publicity activities such as exhibitions, advertising and public relations work.

Applicants, male or female, should be able to produce evidence of successful commercial writing, preferably in the fields of electronics, computing or control systems. They should also have sufficient technical background to be able to collect information by discussions with senior designers, assess its relevance and recognise points requiring deeper investigation.

This is a progressive opportunity in an expanding Division of the Company which is located in an attractive part of South Manchester within easy reach of open countryside and good residential areas.

Apply to Mr. W. L. Robinson, Ferranti Computer Systems Limited, Simonsway, Wythenshawe, Manchester M22 5LA, quoting reference 79WD/6/CW.

FERRANTI
Computer Systems

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All classified copy should reach our offices no later than 5.30 p.m. on the Monday preceding Thursday's publication. If complete artwork is supplied 12 noon on a Tuesday.

Ring David Abbey for further details on 01-261 8016

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EUROLOGIC are leaders in installing small business systems particularly for small users. We specialise on IBM S/32, S/34 and S/38 using RPGII and are willing to train you onto these machines so long as you have a minimum of:

- ★ 2 years' programming on small machines
- ★ an aptitude for learning
- ★ exposure to commercial systems

Of course, if you already know RPGII or have a knowledge of system design and the ability to deal with users, then we would particularly like to hear from you.

For the right people we offer:

- ★ Salaries from £4,500 to £8,000
- ★ Company car after a period
- ★ Bonus scheme
- ★ Expenses
- ★ Reviews every 6 months
- ★ Wide variety of customers and

We have vacancies at the levels of

- Project leader
- Analyst programmer
- Programmer

Please call RICHARD BARKER or MIKE CANNON on (01) 549 8937 or 8933 to arrange an interview

Eurologic Software Ltd.
12 Canbury Passage, Richmond Road
Kingston upon Thames, Surrey


CLASSIFIED COLUMN WIDTHS

Artwork, PMT's and Film etc. are still being supplied oversize, as this places considerable extra work on our printers process department as well as changing page layouts. Advertising agents are reminded our column widths are as follows:

- SINGLE COLUMN 39mm (9 1/2 cms)
- DOUBLE COLUMN 82mm (18 1/2 cms)
- TRIPLE COLUMNS 125mm (30 cms)
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For further details contact David Abbey 01-261 8016

01-261 8016



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If you are, our client, a leader in the fields of software design, analysis, and implementation, would like to cut you in on one of the best deals in the industry. Due to a firm commitment for expansion in their London and Reading offices, they are presently recruiting in two technical areas:

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Two + years of commercial applications design and implementation in Accounting/Financial/Insurance or in Sales Order Processing/Stock Control/Production areas. Technical background preferred. Compensation to £7K.

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Our client offers an excellent career path, from Programmer through project management and into sales, if desired. Extensive training for other machines, operating systems, and languages is readily available.

PROGRAMMERS



One + year of commercial programming experience, utilizing BASIC+ on the PDP 11, operating under RSTS-E. Other languages and operating systems will be considered, with the key being a desire and ability to learn. Compensation is £4K+.

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Licence No: SE(A) 3320



Our Team has a Reputation Second to None — Here is your Opportunity to Join in their Success

CAPP ASSOCIATES has been successful in D.P. recruitment for a considerable time and a company must have something special to stay at the top of this industry. In our case it is a reputation for honest and effective dealing with client companies and people alike, resulting in an increasing demand for our services.

We need to expand our RECRUITMENT CONSULTANCY team by appointing the following:

Marketing Consultant — located in CROYDON to specialise in sales appointments throughout the U.K., with emphasis on computers and allied products but embracing the whole sales spectrum. The position will hold responsibility for establishing this important aspect of recruitment.

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Our Consultants enjoy varied, interesting, well-paid jobs having the freedom to work in their own way with a high level of support—their objective is to recruit people for client companies in a positive and reputable manner. Individual remuneration is geared to the person's success with average earnings at a high level, and company cars provided at more senior levels.

Our Directors want to discuss these opportunities with you, informally but in complete confidence, if you have relevant recruitment and/or sales experience, together with the energy and purpose that they demand. Please telephone initially.

Ref: CW153-9B



CAPP ASSOCIATES
LONDON AND MANCHESTER



01-686 9693
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CROYDON, CR9 2AU

Computer Operators & Trainee Computer Operators

The Central Electricity Generating Board has a number of vacancies for Computer Operators and Trainee Computer Operators at its Headquarters Computing Centre located at 85 Park Street, London SE1 1QB.

The computing infrastructure consists of:

- 1 - IBM System 360 Model 50
- 1 - IBM System 360 Model 195
- 1 - IBM System 360 Model 30/31/33/37
- 2 - ICL 2900 operating under CECIL/ASP

Both Model 195's have access to magnetic disc and tape sub-systems and other peripheral devices. The installation also supports a large data transmission network of remote processors and terminals. The central computers are operational seven days a week and are manned by 5 shifts of operating staff.

Applicants for the post of Computer Operator must be over 18 years of age and should possess GCE 'O' levels or equivalent qualifications, together with at least one year's operating experience, preferably in a large computer installation. Candidates will also be given to those also over 18 but without experience for appointment as a Trainee Computer Operator.

The salaries for these positions will be dependent upon experience and will be within one of the following ranges:

COMPUTER OPERATOR
£3721-£4987 per annum inclusive

TRAINEE COMPUTER OPERATOR
£2820-£4081 per annum inclusive

Applications stating full relevant details and present salary to the Group Personnel Office, C.E.G.B., Sudbury House, 15 Newgate Street, London EC1A 7AU, by 28 June 1979. Quote Ref: SLP/190.

CENTRAL ELECTRICITY GENERATING BOARD
HEADQUARTERS

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Worldwide Aeronautical Telecommunications Network
SITA is the Paris Head Office

Training Instructor

to join a dynamic training team

He will be responsible for preparing and carrying out the training sessions in Paris and abroad, and will take part in all other activities connected with technical information for the personnel.

The applicant should have:

- a liking for teaching and the corresponding aptitudes,
- a good background knowledge of computer science and telecommunications,
- a University degree or equivalent.

A good knowledge of French is essential. Spanish would be appreciated.

Please write giving full career details to:

Director of Personnel - SITA
112, avenue Charles de Gaulle 92622 Neuilly-sur-Seine
France

IBM PUNCH CARD OPERATOR

Fully experienced Operator of IBM 129 Punch Voriflor. Friendly Market Research Company near Victoria Stn. Salary £3700.

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We are the only company in the Computer Industry providing sales training, market research, product promotion and sales recruitment services. We understand the problems. We are aware of the opportunities. We are the experts. **MR. TRADER SAYS SO!** With apologies to Rickenbacker.

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A Sales and Marketing Services Company
Specialising in Recruitment, Training and Research

COMPUTER SALES PROFESSIONAL

Are you a Sales Manager or a Sales Executive with a thorough knowledge of the Commercial Computer Market?
Would you be interested in applying your experience and skills within a Sales Training Environment?

The European Headquarters of DIGITAL EQUIPMENT CORPORATION has a Senior position for a Sales Training Consultant with the following qualifications:

- a broad knowledge of the commercial market for minicomputers and main-frames
- the ability to respond creatively to the challenge of passing on his own experience to Salesmen
- the ability to communicate effectively with people from all over Europe

This position is based in FERNEY-VOLTAIRE, FRANCE (near Geneva).
If you are confident that you could make a significant contribution within DIGITAL'S Sales Organisation, please send your resume to:

Pierre Guedj
Personnel Executive
DIGITAL EQUIPMENT CORPORATION
INTERNATIONAL - EUROPE
12, avenue des Morgins, C.P. 510, 1213 Petit-Lancy 1,
Geneva. Telephone 933311.

Most software people think for only 25% of the time

Even at Section Leader level, too many people in two many companies spend too much of their time on coding and documentation. And not enough on original, creative thought.

Working on one of Europe's key avionics projects, our client has achieved a better balance: a good 60% of thought with only 15% coding. In fact, they're so far ahead of the field that following precedent is as much use as following your nose in thick fog.

The approach is to discard conventional thinking and ready answers, and think everything carefully through from square one.

If that's the way you like to work, you're a natural for our clients' environment, and for one of the new jobs their success is creating all the time. A job like one of these, perhaps.

Section Leader up to £8000

Your section would be one of several working on systems that will simulate the systems operating environment, and your people would handle technical design of specific parts of the system, working to very tight requirement specifications.

The man or woman our client is looking for will have at least three years' experience in mini-based real-time systems for scientific applications, for example, message switching or communications. Although your technical expertise is an important qualification, this is a job that will also test your team management ability.

Recent Graduates up to £6000

If you're a man or woman with at least a year's practical experience in real-time systems for scientific applications, and experience in a high level language or Assembler, you could step straight into an active thinking role in one of our systems teams.

If you want to use your brain to the full, in a company where the rewards and the promotion opportunities come in full measure, write to Position Number BWM 1150, Austin Knight Limited, London W1A 1DS. Applications are forwarded to the client concerned, therefore companies in which you are not interested should be listed in a covering letter to the Position Number Supervisor.

AK ADVERTISING

Senior Operator

BURROUGHS 6800-Two Shift-NW London

Oxford University Press require a Senior Operator to work a two shift system (Monday-Friday 8 a.m. - 10.30 p.m.) on their B6800. Salary up to £5,100 inclusive of shift allowance and London weighting.

Please apply giving brief career details to J. D. Williams, Personnel Manager, Oxford University Press, Press Road, Neasden, NW10 0DD.



THE SALES AND MARKETING BIT

Recruiting ready made sales people

I AM a director of Sales and Marketing Recruiters, and I guess that's no real secret to most sales and marketing people within the computer industry. I make that statement not as a means of cheap publicity, but as a preface to an item which is basically to the detriment of companies which like my own, provide a service for the recruitment of fully experienced computer sales people.

Most of the recruitment of computer sales executives is limited to the confines of the industry and more often than not aimed at direct competitors. This philosophy is generally based on the fragile justification that there is not time within a rapidly growing market to become involved in anything other than a complete salesman who can apparently be fully operational from day one. In this situation the simple implications of a fast growing demand within a virtually static supply seems to escape the agility of the computer-oriented mind.

Apart from the ethical considerations (maybe I'm old fashioned?) it is to a great extent an illusion that the "ready-made" salesmen brings with him any meaningful sales-contacts. Certainly one might expect, say, an experienced main-frame salesman to get up to speed quicker than one who has never sold this type of equipment before, but equally, one with minimal loyalty to his previous employer is just as likely to leave his new one with the same lack of consideration for all concerned.

Of course, there are many salesmen who change employers for completely valid reasons — dissatisfaction with their company, product, direct superior, the opportunity for a significant increase in income or career advancement, usually within a management role. However, such people are vastly outnumbered by those who require re-employment for reasons of personal failure. Successful salesmen are usually too firmly locked-in with high earnings to contemplate starting from scratch with someone else.

A vital consideration in the recruitment of fully experienced salesmen is to understand their behaviour in an operational environment.

Effective and successful salesmen (after all, that is the type you hope you are recruiting!) involve themselves to a degree in a type of self-conditioning whereby they truly believe their product and company to be the best within their chosen market sector. Consequently they have equally projected this belief to their existing and prospective clients alike and their business relationship is built upon this very premise. The divine revelation that this conviction should at a single stroke be lost in one supplier and discovered in another holds little if any credibility.

It is also important to bear in mind that within an industry short of some 500 salesmen, purely in terms of shortfall on complement, employers are extremely reluctant to allow successful salesmen to leave. Promotion, increased income, new territory and more, can usually be generated when the need arises. It therefore begs the question, "How successful is the apparently successful salesman you are about to recruit?"

The point I am trying to make is two-fold:

Firstly, the recruitment of salespeople from competitors is dangerous, and should be approached with extreme caution. Certainly direct and indirect references are a must.

Secondly, the best method of obtaining loyal, enthusiastic and committed selling staff is to grow your own by way of effective selection methods and comprehensive ongoing training. This is within the reach of most companies which are prepared to make the financial and philosophical commitment to starting up the sales training flywheel.

The production of new salesmen may in many cases rely to some degree on the use of external sources for selection and training, but the total process should not be considered as the privileged conclave of the major manufacturers.


The dedication of recruitment to ready-made sales people reflects short-term thinking allied to a lack of commitment which in turn is perhaps not a particularly attractive environment for the experienced salesman either.

TRADER

Puzzle Answer

FIRST, place 24 bricks flat on the bottom of the box, as shown in the left-hand diagram. This leaves a 1cm square hole in the centre of the layer, and a 17 x 2cm space at one side.

Then, add another ten layers on top of the first, to make a preliminary total of 24. The other 31 bricks may be slotted in down the side of the stack, as shown on the right.



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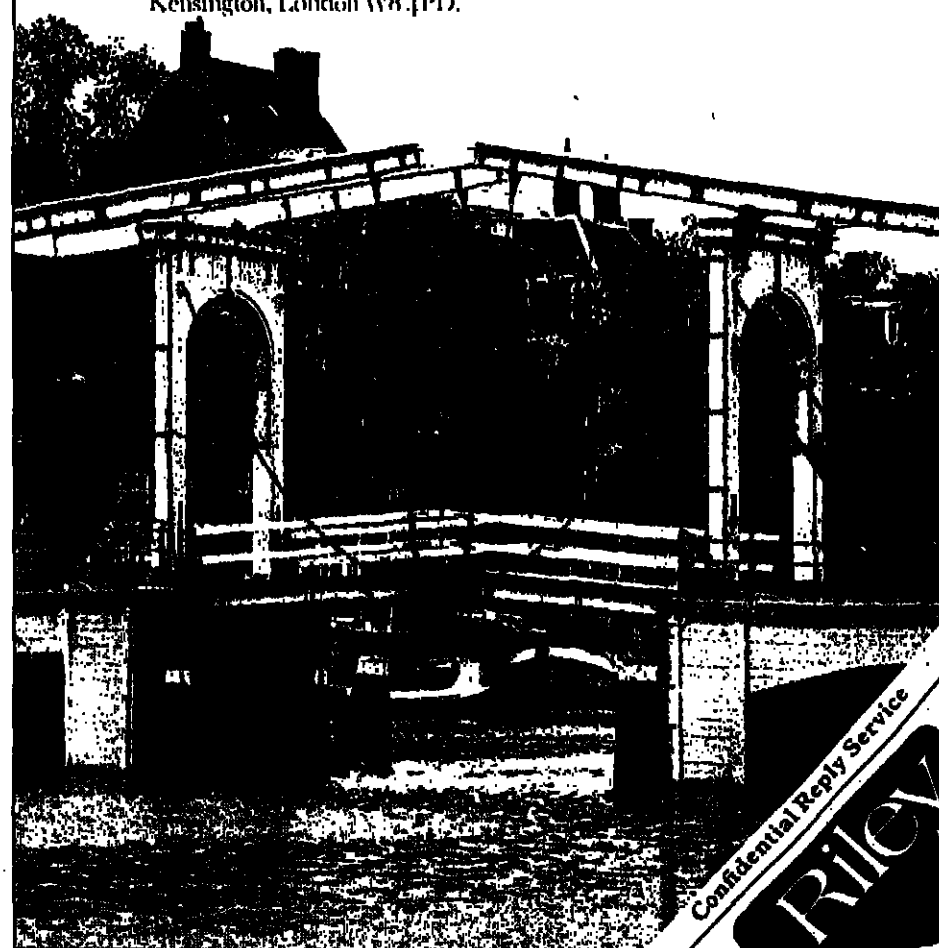
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